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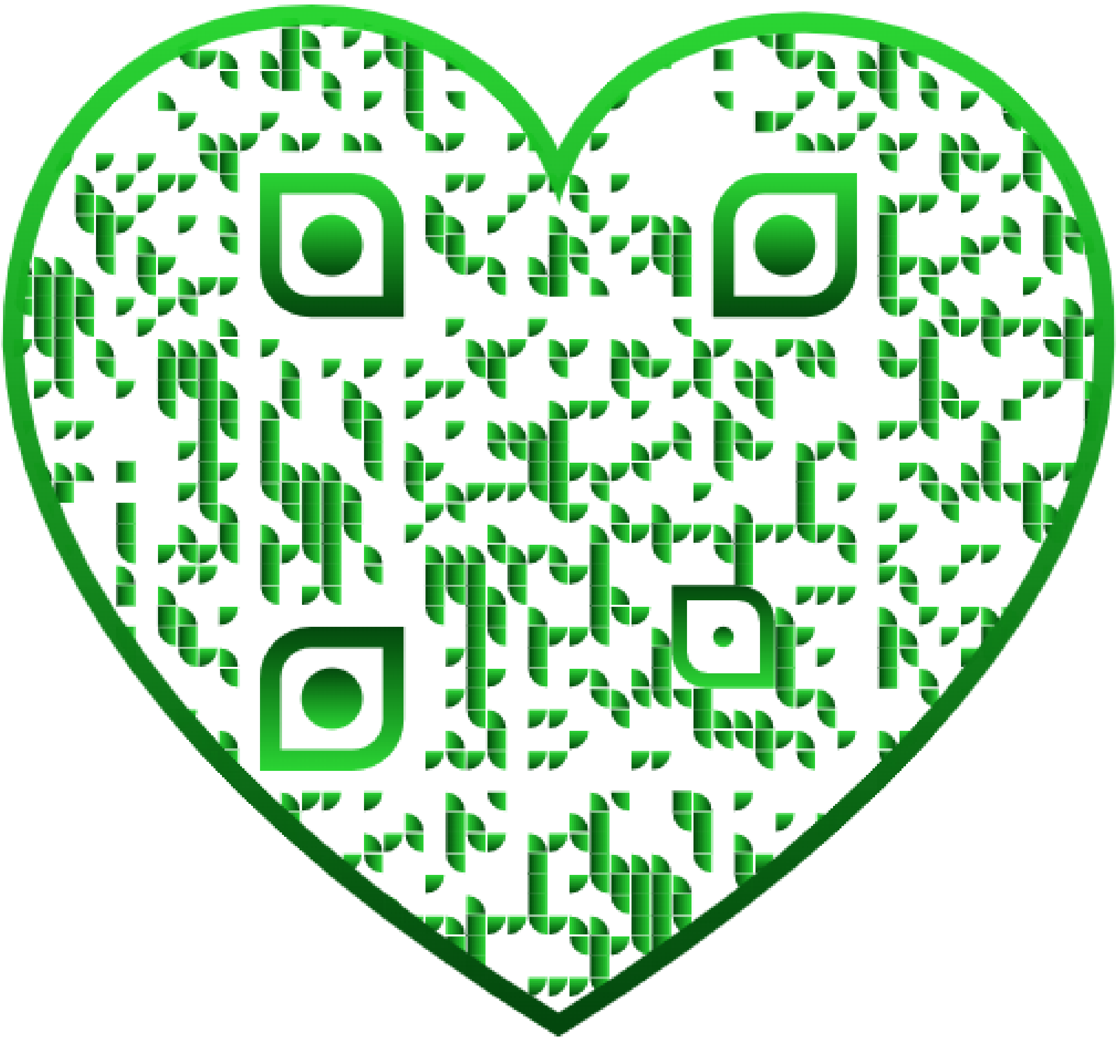

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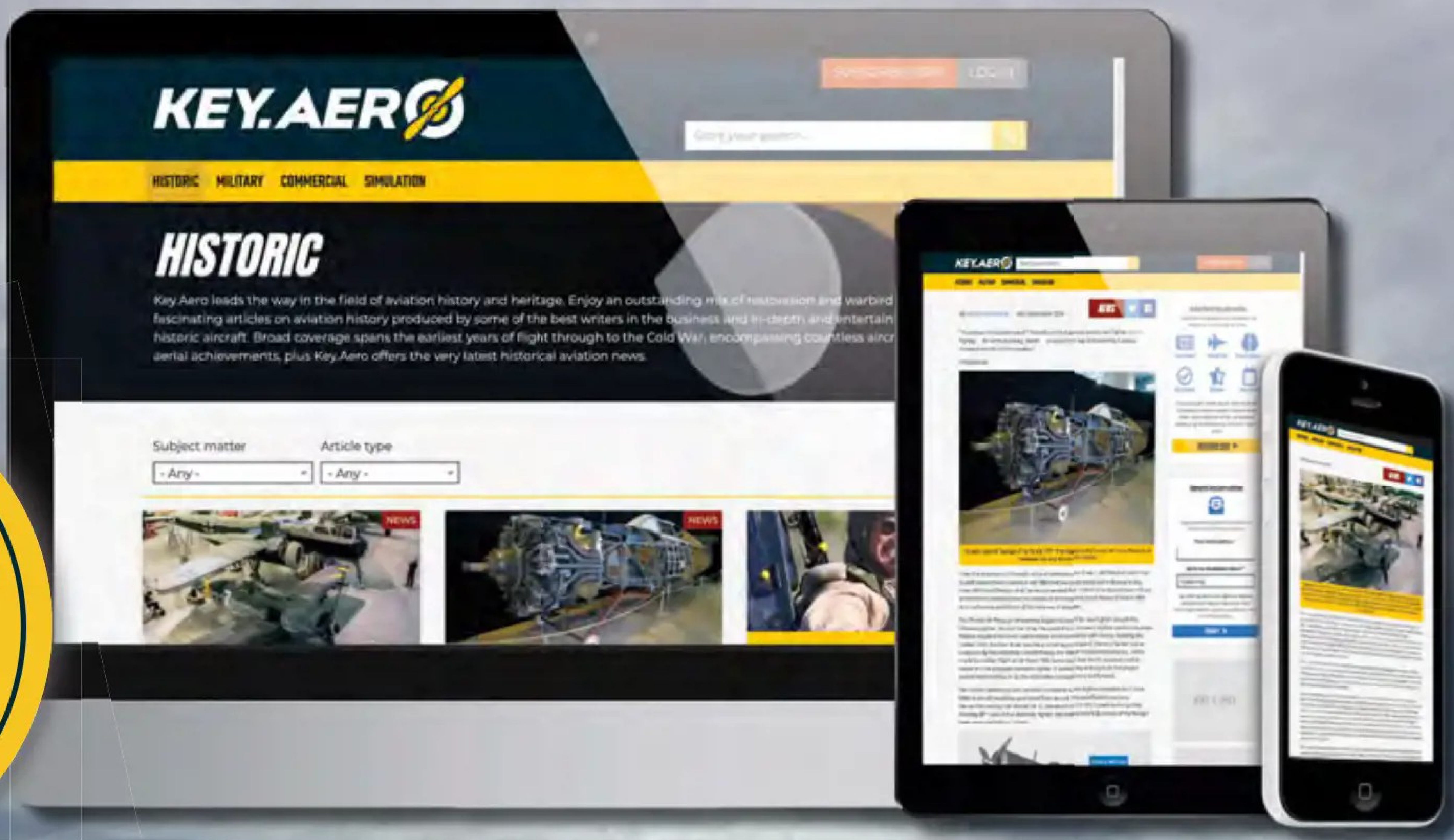
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Comment

SEAD/DEAD shows the way

Whatever your views on Israel – and there are, of course, many – you have to be impressed by the Israeli Air and Space Force (IASF). It is undoubtedly the most operational air force in the world, given its recent missions over Gaza, Yemen, Lebanon, Syria and Iran. The recent Operation Rising Lion on Iran was carried out in typical textbook fashion, gleaning plenty of intelligence from several sources including Nachson SIGINT (Signals Intelligence) aircraft, deploying special forces and eliminating enemy air defences, which included deadly Russian S-300/400 surface-to-air missiles (SAMs). All aspects of the IASF have been utilised – and let's not forget what a stunning job the Boeing 707 tankers of 120 Squadron performed to top up the masses of fighters involved.

If you ever wanted to realise the importance of the suppression of enemy air defences/destruction of enemy air defences (SEAD/DEAD) mission – a technical term used to render an adversary powerless to fight back – then read our feature on page 32-39. You will see how the IASF eliminated the most deadly SAMs with clinical precision last year, before more were taken out during Operation Rising Lion in June, clearing the way for the bombers to attack their targets without the threat of retaliation.

Most of us have understood SEAD/DEAD for years and appreciate what a critical role it plays, and we've been surprised how European air forces have tended to ignore it. We have very few of these Wild Weasel assets, as they are known: Italian Tornado IDS and German Tornado ECRs reinforced by USAF F-16CM from the 480th Fighter Squadron at Spangdahlem. Some may recall the Swedish air force also had the very capable SK-37E Viggen, but they were retired prematurely in 2005 when the Peace Dividend had taken a firm grip and Vladimir Putin appeared to many as a nice guy.

A Tornado ECR of Taktisches Luftwaffengeschwader (TLG Tactical Air Force Wing) 51 departs its home base at Schleswig. The Luftwaffe will replace the Tornado ECR with the Eurofighter EW round 2030, armed with AARGMs Alan Warnes

Yet here we are facing a very different and dangerous Russia. Fortunately, the F-35A Lightning is now coming on line and is able to fulfil these missions for many European air forces – although not the RAF, who use the Typhoon, as the Germans will be doing too. The use of electronic warfare to jam radars and thus neutralise SAMs is now big business, as we saw at Paris Airshow, where a German Europfighter displayed the latest advanced anti-radiation missile (AARGM), Saab admitted the Gripen E could be boosted with a SEAD mission and the Rafale was shown with a large electronic jamming pod. Let's hope NATO can bolster the US military's SEAD assets with more European assets soon.

Alan Warnes
Editor at Large

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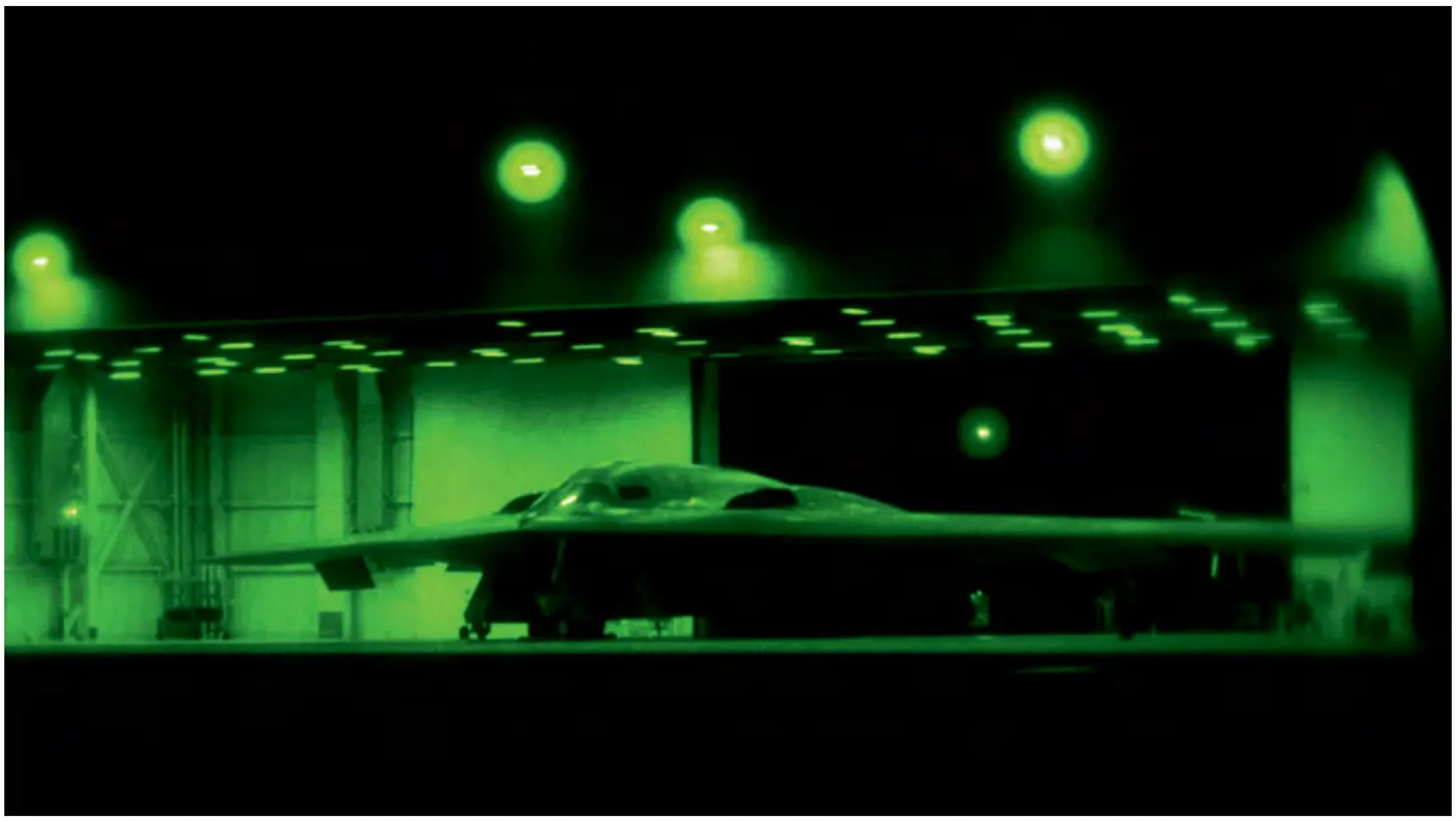
Iranian nuclear sites bombed



Seven B-2A Spirits carrying 14 GBU-57 MOPs bombed Iranian military nuclear sites at Fordo, Natanz and Isfahan on the night of June 21/22. One of them is seen here at Whiteman Air Force Base, Missouri, prior to departure *USAF*

SEVEN NORTHROP Grumman B-2A Spirits dropped 14 huge bunker-buster Massive Ordnance Penetrator (MOP) bombs on Iran's military nuclear sites during the night of June 21/22, under Operation Midnight Hammer.

The US government claimed the mission was a total success; it came after the deadline imposed on Iran by US President Donald Trump to shut down the facilities passed, and after eight days of bombing raids by Israel Air and Space Force F-15s, F-16s and F-35is. Israel aimed to eliminate Iran's senior military commanders, many while they slept in their beds, thus effectively breaking Iran's military chain of command. Several top nuclear scientists associated with the military nuclear programme were also killed.

In retaliation for the B-2 strikes, Iran's army fired ballistic missiles at Al Udeid Air Base in Qatar, the biggest US facility in the region, on June 23, but warned the US government before the attacks so personnel could be evacuated. The following day, both the US and Qatar mediated a ceasefire between the two warring sides.

The bombardment came at a huge cost to the Iranian air force. During Israel's Operation Rising Lion, several bases were struck including the 1st Tactical Fighter Base (TFB) at Lashgari in Tehran, 2nd TFB Fakkuri at Tabriz, 3rd TFB Nojeh near Hamedan, 4th TFB Vahdati at Dezful, 8th TFB Babaiee near Isfahan and the forward operating base of the Iranian Air Force (IRIAF) at Mashhad IAP. Multiple aircraft were destroyed including 12 F-5E/Fs, around ten MiG-29B/UBs, ten F-4E Phantoms, one RF-4E, two F-14A Tomcats, one KC-707 tanker and five Beechcraft F33A/C Bonanzas.

Alan Warnes/Babak Taghvaee

For more, see *Crushing Iran's nukes*, page 32-39

A B-2A Spirit recovers to Whiteman AFB after the daring Midnight Hammer mission *USAF*

The mighty US weapon

THE bunker-buster bomb used to target Iran's nuclear facilities is officially known as the GBU-57A/B Massive Ordnance Penetrator (MOP). The huge weapon is the 57th design in the series of such bombs, which date back to World War Two.

The GBU-57A/B is a precision-guided weapon developed specifically to neutralise deeply buried, fortified targets. Weighing around 30,000lbs, this ordnance is among the heaviest in the USAF inventory.

When dropped from 50,000ft, the cruising ceiling for the B-2A Spirit bomber, the GBU-57/B uses sophisticated lattice fins that adjust the bomb's trajectory in flight to guide it to its target. While the exact impact velocity is classified, it is estimated to exceed Mach 1.

In 2015, experts believed the US had 20 GBU-57s. While the exact size of the current stockpile is unclear, fewer than six bombs are likely remaining.

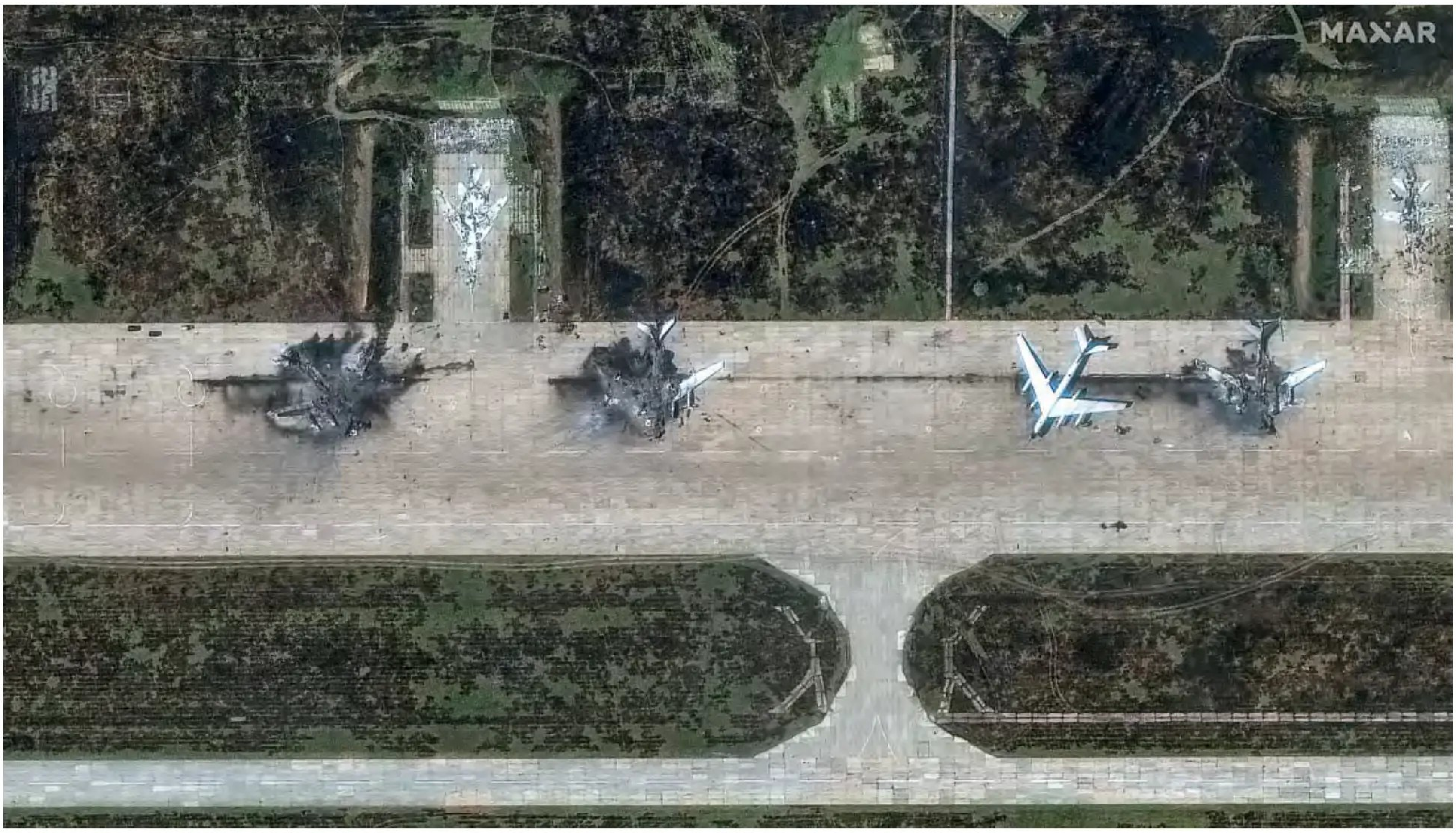
Engineered for extreme penetration, it is capable of breaching 200ft of reinforced concrete or 130ft of rock, due to a specially designed high-performance steel alloy casing built to withstand high-velocity impact with hardened concrete bunkers. The warhead, a 5,300lb BLU-127, integrates GPS and inertial navigation systems for high precision.

Development of the GBU-57 began in November 2004, when the US Air Force Research Laboratory awarded Boeing a $30m contract to develop the latest iteration of the weapon. It was developed because after the 2003 invasion of Iraq, engineers studied bunker strikes with smaller and older GBU models and found they hadn't penetrated deeply enough, causing only limited damage.

A prototype was detonated in March 2007 at White Sands Missile Range in New Mexico, where its test warhead set a new record by penetrating 19ft 3in of a 20ft, 330-ton, steel rod-reinforced concrete block.

It was originally envisaged that it would be carried by the B-52 Stratofortress, but the size and weight of the design meant only the B-2 Spirit could deliver the weapon, with each B-2 capable of carrying two GBU-57s in its internal bomb bay.

More on Ukraine 'Spider's Web'



This satellite image shows the three destroyed Tu-95MS bombers at Belaya Air Base on June 4. Note the fourth Tu-95MS, which – despite appearing intact at first glance – seems to have been damaged in the fire that destroyed the neighbouring aircraft *Maxar Technologies*

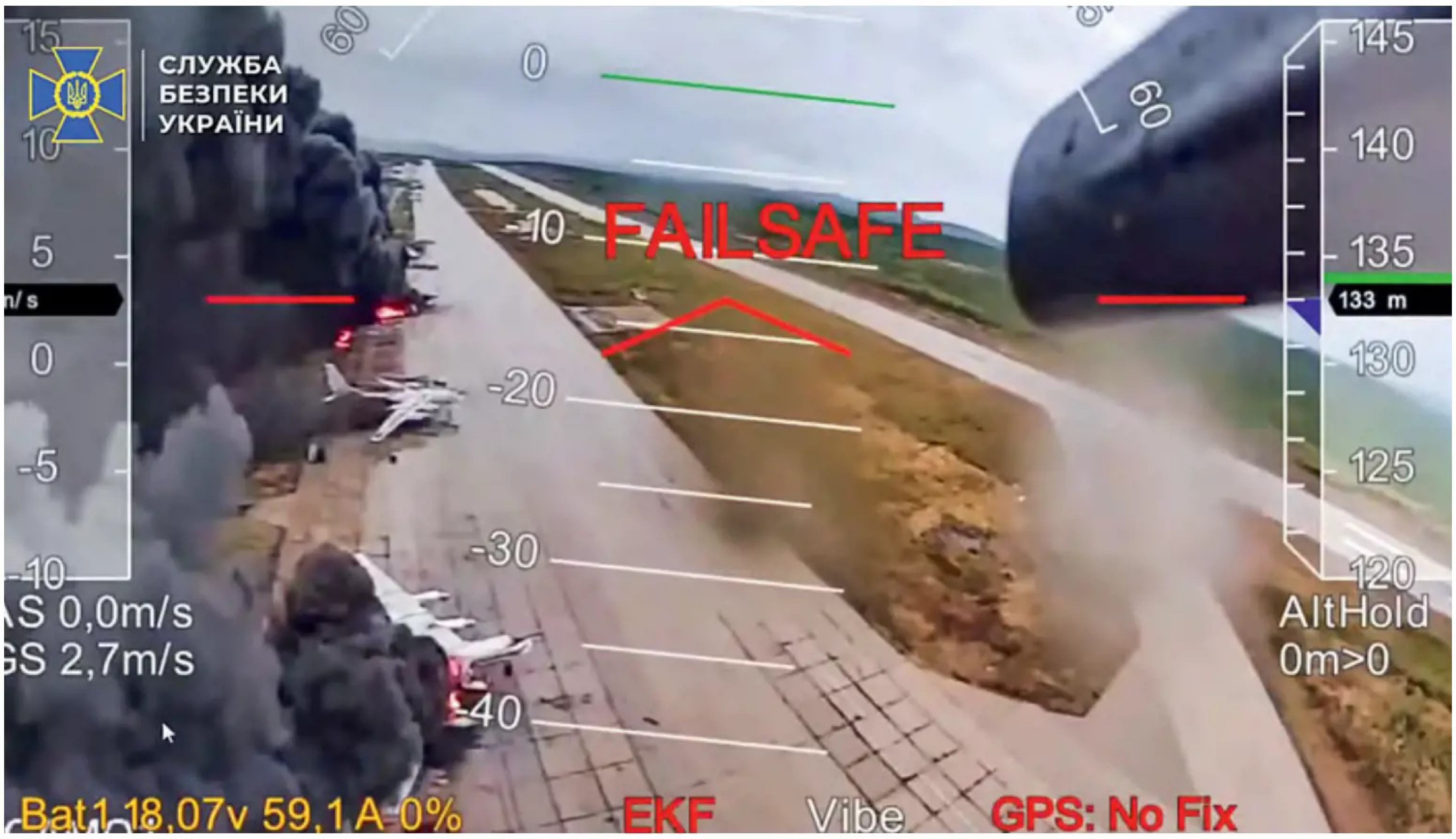
MANY DETAILS remain secret concerning the daring Operation Spider's Web – an orchestrated attack by the Ukraine Security Service (SBU) against five air bases of the Russian Aerospace Forces (RuAF). However, some of its results have been confirmed using post-strike satellite imagery in combination with a video released by the SBU.

The operation on June 1 was aimed primarily against the RuAF Long-Range Aviation (LRA) – the branch operating its strategic bomber fleet. Five air bases were targeted – Belaya (Irkutsk Oblast), Dyagilevo (Ryazan Oblast), Ivanovo (Ivanovo Oblast), Olenya (Murmansk Oblast) and Ukrainka (Amur Oblast). Ultimately, only four were successfully hit, as the attack against Ukrainka Air Base (AB) seems to have been thwarted.

The greatest success was achieved at Belaya AB, where four Tu-22M3 *Backfire-C* and three Tu-95MS *Bear-H* bombers were destroyed, both on the main apron and revetments in the southern dispersal area.

A Tu-22M3 destroyed in a revetment has been identified as RF-94216 and a Tu-95MS destroyed on the apron is RF-94120 ('22 Red', named 'Kozelsk'), both known to be operational aircraft. Further aircraft would have been damaged in the process, as it took more than one drone to set a bomber ablaze.

The attack against Olenya AB also netted



A still from the video released by the SBU showing three Tu-95MS bombers and a single An-12BK transport on fire on the main apron at Olenya Air Base during the attack on June 1 *SBU* considerable results – at least four Tu-95MS bombers and a single An-12BK *Cub* transport were confirmed destroyed there. The An-12BK was identified as RF-94211 ('11 Red'), while two Tu-95MS bombers are identified as RF-94132 ('14 Red', named 'Voronezh') and RF-94257 ('22 Red', named 'Chelyabinsk'), all being operational aircraft. Also, a number of Tu-22M3s located in the northern dispersal area were struck, but none set ablaze – these were most probably stored aircraft that were only damaged in the process.

During the attack at Dyagilevo AB at least three stored Tu-22M3s were attacked – two parked on the central apron located just north of the runway's centre, and one in a revetment further northwest of it. As at Olenya, none of these were set ablaze, but were clearly damaged and had to be repositioned after the attack.

Finally, at Ivanovo AB, two of the stored A-50 *Mainstay* airborne early warning and control (AEW&C) aircraft sitting just north of the eastern end of the runway were hit. They too were repositioned, but absence of any scorch marks on the hardstands indicates that these were only damaged, presumably only their rotating antennas being affected.

The final tally so far would appear to be a single An-12BK transport, four Tu-22M3s and seven Tu-95MS bombers – a total of 12 operational LRA aircraft confirmed destroyed. The SBU officially claimed hitting 41 aircraft, but clearly not all were destroyed (or even operational to begin with); a number of them were certainly damaged, although it remains unknown to what extent. It is indicative that on the morning of June 3, Ukraine updated the official total figure of Russian aircraft destroyed in the war by adding 12 aircraft, but in the afternoon this was corrected to 41 – clearly the Ukrainian General Staff also arrived at the number of 12 aircraft destroyed, but later decided to stick to the figure originally released by the SBU.

Nonetheless, Ukraine achieved a remarkable feat managing to destroy in a single blow at least 10% of LRA's strategic bomber fleet (estimated at 120-130 in total, stored aircraft included).

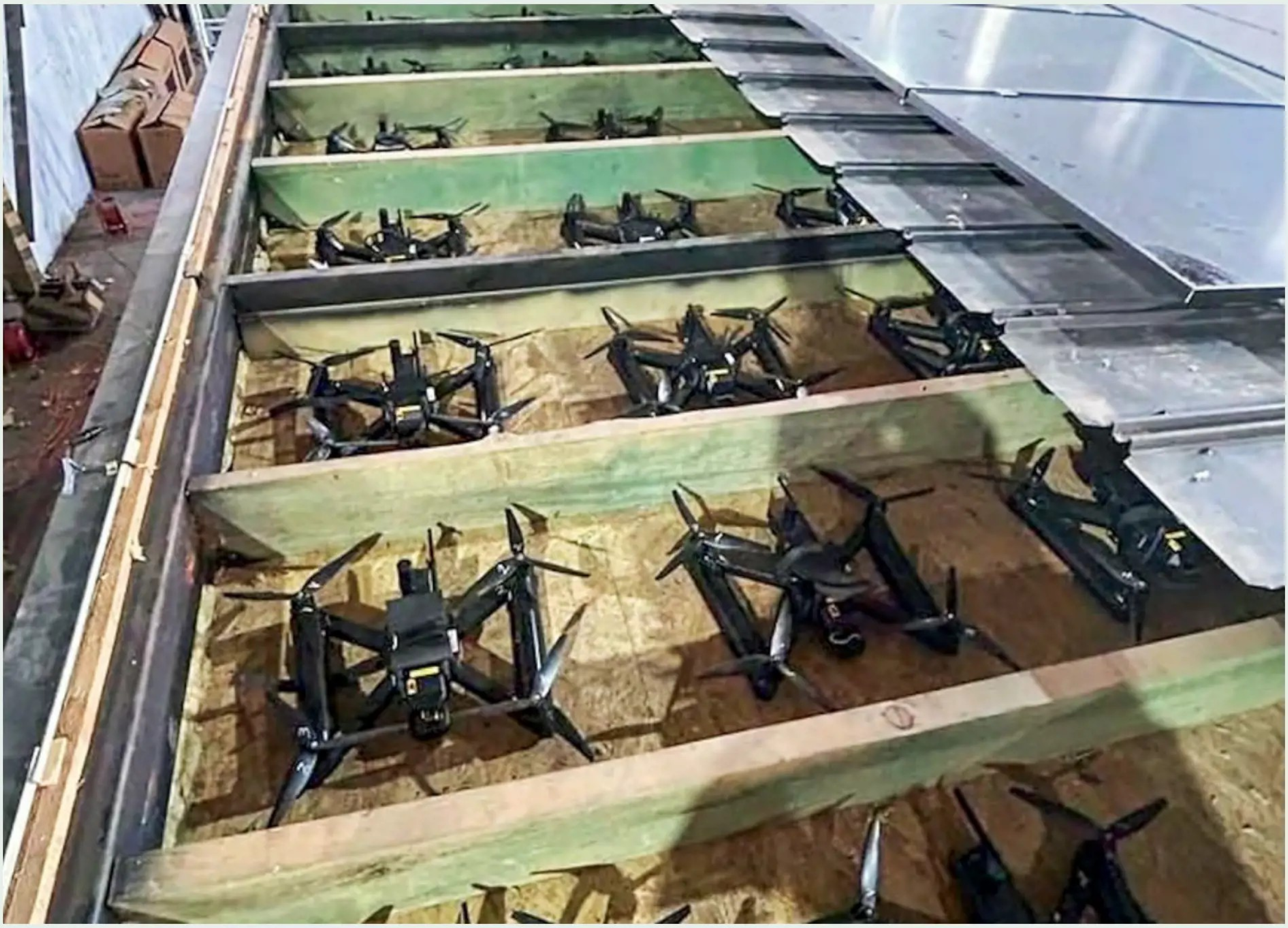
Vladimir Trendafilovski

The drones

The attacks were carried out by first-person-view (FPV) drones, hidden inside wooden cabins loaded onto trucks – the drivers being totally unaware of the nature of the cargo. The drones were remotely piloted by SBU operatives stationed at separate locations in the area, although it seems that at least some of the work was also carried out using artificial intelligence (AI), which makes perfect sense given the number of drones involved.

According to the SBU, the drones used AI during some aspects of their flight, combined with manual intervention by a human operator where possible. All drones had pre-planned flight paths and target acquisition algorithms in case of signal loss, which may explain why some attacked aircraft obviously not operational.

Nonetheless, the operation was a success and SBU claims that – in contrast to similar operations in the past – all of its operatives managed to escape unscathed.



The drones were loaded into wooden cabins, their roofs being opened remotely to release them at the correct time and location SBU

Prince of Wales arrives in Singapore

Lightnings of 617 Sqn and 809 NAS on the flight deck of HMS 'Prince of Wales' *UK Crown Copyright.*

THE ROYAL Navy aircraft carrier HMS *Prince of Wales* arrived in Singapore on June 23 for its latest port call following its transit through the Suez Canal and Red Sea.

Widespread reporting in the Middle East stated that Yemen's Houthi group had purportedly permitted the UK Carrier Strike Group (GSG) to pass through the Red Sea after the Royal Navy (RN) reassured them that it was "transiting for manoeuvres and not conducting any combat operations".

The claim had been made via social media by the Houthis' Supreme Political Council, which had advised the RN that it would allow safe passage provided it was "on a non-combat mission or does not pose an aggressive intent".

When approached for comment by *AirForces Monthly,* the UK Ministry of Defence (MOD) did not deny the claims, simply stating that as a matter of policy it would "not offer comment on such speculation". What is clear is that the MOD took no chances, deploying additional Typhoon FGR4 and Voyager tankers to RAF Akrotiri in Cyprus together with Poseidon MRA1 maritime patrol aircraft (for more details see *The Med and Beyond*, *AFM* July 2025, p28).

Prior to HMS *Prince of Wales* (R09) arriving for its port call, one of its F-35B Lightnings diverted to Thiruvananthapuram International Airport in India. The aircraft reportedly was critically low on fuel and was unable to recover to the aircraft carrier due to poor weather. Once on the ground the Lightning the developed hydraulic issues.

HMS 'Prince of Wales' arrives in Singapore *UK Crown Copyright*

A team of engineers deployed by Merlin HC4 to effect repairs, but the Lightning, serial ZM168, remained stranded for more than a week. The diversion sparked great interest in the local media, which concluded that the Indian Air Force's tracking of the fighter on radar meant the stealth aspects of the jet were ineffective. However, images showed the UK jet was equipped with luneburg lenses, radar reflectors fitted to make the aircraft visible to radar.

Brize incursion

TWO RAF Voyager tankers were damaged by political activists on June 20 in an embarrassing breach of security at RAF Brize Norton, the UK's military air transport hub in Oxfordshire.

Two activists from the group Palestine Action were able to access the air base and ride e-scooters to aircraft hard standings where they sprayed red paint into the engines of a pair of parked Voyager tankers.

The actions drew condemnation from UK Prime Minister Sir Keir Starmer who described the action as "disgraceful" and an "act of vandalism".

The damage, estimated to cost more than £50m to repair, has seen the aircraft removed from frontline duties for an undisclosed period. The incident comes at a time when the RAF Voyager fleet is under pressure supporting operations in the Middle East and the Carrier Strike Group deployment.

These operations do not include refuelling of US and Israeli jets, which the group claimed as justification for their actions. In response, the UK government has taken steps to designate the group a terrorist organisation, and the RAF is perhaps unsurprisingly undertaking an urgent review of security.

RAF returns to nuclear role with F-35As

THE UK is to acquire at least 12 F-35A Lightning IIs to carry tactical nuclear bombs, a move the government described as "the biggest strengthening of the UK's nuclear posture in a generation".

At the NATO Summit in The Hague on June 25, British Prime Minister Sir Keir Starmer said a new RAF squadron of F-35As would see the UK join NATO's Dual Capable Aircraft (DCA) commitment to deliver US B61-12 nuclear gravity bombs. In so doing, the nation will join Belgium, Germany, Italy, the Netherlands and Turkey, which are all, apart from the latter, acquiring F-35As to fulfil the DCA role.

"In an era of radical uncertainty we can no longer take peace for granted," said Sir Keir. "These F-35 dual capable aircraft will herald a new era for our world-leading Royal Air Force and deter hostile threats that threaten the UK and our allies. The UK's commitment to NATO is unquestionable, as is the alliance's contribution to keeping the UK safe and secure, but we must all step up to protect the Euro-Atlantic area for generations to come."

The head of NATO, Mark Rutte, welcomed the plan: "The UK has declared its nuclear deterrent to NATO for many decades, and I strongly welcome today's announcement that the UK will now also join NATO's nuclear mission and procure the F-35A. This is yet another robust British contribution to NATO."

The new aircraft will be based at RAF Marham and will equip 207 Squadron, the Lightning Operational Conversion Unit. The longer endurance of the A model and lower maintenance hours will improve pilot training and are cited as the reasons for the decision. The freeing up of the F-35Bs currently used for training will also improve force generation for carrier operations.

The Government was at pains to point out that the decision to purchase a dozen of the A-variant did not mean extra aircraft, just a diversification of the fleet. The UK is still taking delivery of the initial batch of 48 F-35Bs and announced in 2022 an intention to acquire an additional 27 Lightnings which included one attrition replacement. The A models will be included in this batch meaning a mixed fleet of 62 F-35Bs and 12 F-35As.

The official line from the Ministry of Defence is that the UK is still committed to acquiring 138 F-35s through the life of the programme, with options on additional purchases forming part of a Defence Investment Plan.

No information has been given on whether the US nuclear weapons will be stored at RAF Marham in Norfolk, where the former nuclear storage facility is still in situ, at RAF Lakenheath in Suffolk or elsewhere.

The announcement followed the publication of the Strategic Defence Review (SDR) on June 2 that had prompted speculation that the RAF would restore an air-delivered tactical nuclear weapon capability. The service has not had a nuclear role since 1998 when the WE.177 freefall nuclear bomb was withdrawn from its inventory.

The SDR recommended "commencing discussions with the United States and NATO on the potential benefits and feasibility of enhanced UK participation in NATO's nuclear mission".

The UK's current deterrent comprises a fleet of four Vanguard-class nuclear powered submarines, which will be replaced by the Dreadnought-class. Why the addition of air delivered weapons is required was revealed by Brig Gen (Ret'd) Robbie Boyd. Speaking at a one-off session of the Defence Select Committee, the former Vice-Chief of the Defence Staff said: "We've got to build a more survivable deterrent. We're building submarines, but quantum technology tells us that in the long term, in the future, we're going to be at risk of exposing them. So we need to diversify our deterrent as probably a priority right now in Europe."

One issue to address is the inability to air-air refuel (AAR) the A model from RAF tankers. The Voyager Concession Contract with AirTanker, which is due to expire in March 2035, restricts the RAF sourcing AAR from elsewhere, which has prevented adding the capability to the Atlas C1 fleet. One exception is the AAR of RAF RC-135W Rivet Joints by USAF tankers, but when asked the MOD refused to clarify the position citing "commercial sensitivities".

GCAP edges closer

GCAP is aiming to enter service in 2035 *Leonardo*

THE TRILATERAL Global Combat Air Programme (GCAP) has officially launched Edgewing, a joint venture company that brings together BAE Systems (UK), Leonardo (Italy) and Japan Aircraft Industrial Enhancement Co Ltd as equal partners.

The new company will undertake the design and development of the sixth-generation combat air system under the GCAP and will subcontract the manufacturing and final assembly of the aircraft to BAE Systems, Leonardo, Mitsubishi Heavy Industries and the wider supply chain.

The newly formed entity is described as playing a central role in achieving the programme's ambitious goals – including the in-service date of 2035 – while setting a new benchmark for trilateral industrial partnership across Europe and Asia.

Edgewing will also remain the design authority for the life of the programme, which is expected to be beyond 2070. Its operations and joint teams will work in each of the partner nations with a headquarters in the UK.

Marco Zoff, the first Chief Executive Officer of Edgewing was formerly the managing director of Leonardo Aircraft Division. He said: "By uniting the strengths of our talented people in UK, Italy and Japan, we are not only delivering the next-generation combat air system – we aim to set a new global standard for partnership, innovation and trust. Together, we will push boundaries, embrace agility, enhance our national supply chains and create a legacy of security and prosperity for our nations and future generations."

GCAP is planned to replace the Eurofighter Typhoon in service with the Royal Air Force and Italian Air Force, and the Mitsubishi F-2 of the Japan Air Self-Defense Force.

Final AH-64Es delivered

TWO OF the final three of 50 AH-64E Apache Guardians have been delivered to the Army Air Corps in the UK. The pair of attack helicopters, serialled ZM747 and ZM748, were air freighted by C-5M Super Galaxy to RAF Mildenhall, Suffolk, on May 28 before transfer by road to Wattisham Flying Station.

Procured through a £1.7bn foreign military sale with the US government, the AH-64E combines parts from the Mk1 (D-model) Apache, which served the British Army for more than two decades, with a new fuselage and updated technology.

The 50th Apache, ZM749, will remain in the US for software testing to enable advanced teaming with uncrewed air systems before being delivered to the UK in 2026.

Protector enters service

THE PROTECTOR RG1 (MQ-9B) officially entered RAF service on June 10. The move follows military certification of the type in May 2025 and a series of test flights by 56 Test and Evaluation Squadron at RAF Waddington.

The first Certifiable Ground Control Stations (CGCS) and simulators have also now been delivered and installed at the Lincolnshire base. The first Protector was delivered in September 2023 with four currently at Waddington and a further six in the USA for crew training, test and evaluation. Deliveries of the remaining six of the medium-altitude, long endurance UAV are expected to be completed by the end of the year.

Further testing will be completed over the summer prior to the planned transition from the RAF's Reaper platform to Protector later in 2025. It is unclear when, or if, Protector will be deployed to the Middle East to replace the Reapers in Operation Shader.

Seen on its first UK flight, Protector is operated by 31 Squadron, 54 Squadron (Operational Conversion Unit) and 56 Test and Evaluation Squadron at RAF Waddington *UK Crown Copyright*

New roles for UAV

POTENTIAL NEW roles have emerged for the Protector RG1 (MQ-9B). The Strategic Defence Review published in June 2025 recommended enhancing the UAV with maritime surveillance equipment and connectivity to give it wider utility. The vulnerability of the large UAV in contested environments has seen the RAF look for additional utility for the platform and integration with the Poseidon MRA1 is a favoured option, representing a welcome force multiplier for the modest fleet of nine maritime patrol aircraft.

Meanwhile the MoD is examining the MQ-9B in the airborne searly warning (AEW) role to replace the Crowsnest system mounted on Merlin HM2 helicopters that will be withdrawn at the end of the decade.

In an answer to a written question on May 19, Defence Procurement Minister Maria Eagle said: "Through the MQ-9 International Co-operation Support Partnership, of which the United Kingdom is a signatory, the Royal Navy has established that the General Atomics MQ-9 can be modified to operate from the Queen Elizabeth-Class carriers. As such, the MQ-9 is being considered as a candidate for the RN's requirement for Carrier Strike Airborne Early Warning following the planned withdrawal of the Crowsnest Airborne Early Warning system when it reaches the end of its service life."

General Atomics Aeronautical Systems, Inc is partnering with Saab to develop an AEW&C capability for the MQ-9B Remotely Piloted Aircraft, with plans to fly an AEW version. *For more see* Saab ties in with GA's MQ-9B, p19*).*

The Royal Navy has evaluated the General Atomics Mojave UAV being used to demonstrate uncrewed short take-off and landing (STOL) capabilities for an upcoming MQ-9B STOL, a wing-kit that allows the MQ-9B to operate from austere runways and aircraft carriers.

Ohe! The French are here

Kevin Wills reports from Exercise Catamaran, staged in North Devon, which saw a large number of French helicopters fly ashore to the Braunton Burrow Military Training Area

Three NH 90s can be seen picking up French commandos from the vast sand dunes at Braunton Burrows *Photos Kevin Wills*

DURING THE week-long Exercise Catamaran that took place in the south-west of England in early June, the skies were regularly occupied by French Army (ALAT) helicopters. They were operating from vessels involved in the amphibious element of the wider French-led Polaris 25 exercise, working with allied nations on warfighting skills.

Some 20 ships, 40 aircraft, fixed wing and rotary, and 3,000 personnel were involved in the training in the Channel and Atlantic. The main players in Exercise Catamaran were Britain, France, Italy, Spain and Brazil, however there were also smaller numbers of troop and equipment from other countries such as the USA, Portugal, Germany and the Netherlands.

Positioned just off the North Devon coast in Bideford Bay, the area was dominated by the two amphibious helicopter carriers, L9015 FS *Dixmude* and L9014 FS *Tonnerre.* Working alongside the two French ships were the Spanish ship *Galicia* and the Italian *San Giorgio and the Royal Navy's FA RFA Argus.* Operations in the air and on the sea occurred daily, despite at times some difficult weather conditions.

Three Tigres were seen operating from the amphibious assault ship, L9015 FS Dixmude. They mostly operated in pairs during the exercise,

Landing craft can be seen approaching the shore, with L9015 FS Dixmude in the background

ALAT Tigre 6010/BJJ seen over Braunton Burrows Military Training Area, North Devon, on June 4. The Tigre was providing top cover for French ground troops while being controlled by Spanish JTACs

French Army NH-90TTH 'EBV' is seen low level with a gunner poised, over the unique landscape of Braunton Burrows on June 3

Royal Navy Merlin Mk4 ZJ118 B from 845NAS is seen at Crow Point , North Devon. Two Merlin Mk4s were operating from RFA Argus, but were also seen cross decking onto the FS Dixmude

Italian Amphibious Landing Ship, L-9892 San Giorgio is seen off the North Devon coast on June 4. It had Merlin EH101ASH MM81493 embarked, which can be seen here approaching the vessel

During Exercise Catamaran this AS365 Dauphin, 810 from the French Navy, seen here visiting Exeter Airport on June 5 - a rare sight on UK soil

although on June 3, all three were seen together as past of a mixed package of nine British and French helicopters which performed an air extraction of 40 Commando Royal Marines from RMB Chivenor to their home at Norton Barracks in Somerset. The formation consisted of two AW159 Wildcats from 847 NAS, two Merlin Mk4 845 NAS, two French Army NH90TTHs and three French Army Tigres.

Two Dauphins were operating from the deck of L9014 FS *Tonnerre*, being used in a variety of different taskings including transportation of special forces, marine patrols and underslung load carrying.

These manouvres are part of the wider Combined Joint Expeditionary Force (CJEF) conceived following the 2010 Lancaster House Treaty and provides the framework for close military co-operation between the UK and France. This deep relationship will be further strengthened later this year as the two nations refresh the Treaty.

For more on how the French Army helicopters worked up aboard LHA Tonnerre, prior to these drills, see Keeping Ship Shape, page 68-73.

Second Bulgarian F-16 Block 70 lands

ON JUNE 8, the second Bulgarian Air Force F-16 Block 70 aircraft landed at Graf Ignatievo Air Base. The aircraft, with tail number 313, arrived under the callsign RETRO53 after departing from RAF Mildenhall, where it had arrived on June 6 following a flight from the manufacturer's airfield in Greenville.

The first single-seat F-16C to arrive in Bulgaria, it was initially expected in early April together with the two-seater, tail number 301, but delivery was postponed several times. Tail number 301 arrived in Bulgaria on April 2 and was officially presented at a ceremony at Graf Ignatievo on April 13. The first flight on Bulgarian territory with the two-seater aircraft was conducted on May 28.

The Bulgarian Air Force is carrying out procedures for the official acceptance of the new aircraft, and regular flights with this type have not yet begun. Tail numbers 301 and 313 are part of the total of 16 F-16 Block 70 aircraft ordered (12 single-seat and four two-seat aircraft).

Anton Balakchiev

The F-16 block 70, tail number 313, comes into land at Graf Ignatievo Air Base *Anton Balakchiev*

Sweden and Denmark join NATO tanker unit

Allied fighter jets escort an A330 MRTT aircraft *MMU*

SWEDEN AND Denmark formally joined the Multinational Multi Role Tanker Transport Unit (MMU) on June 25 during the NATO Summit in The Hague, increasing strategic air mobility across the Alliance.

With their accession, the MMU now comprises eight partner nations, enabling the expansion of its Airbus A330 MRTT fleet to 12 aircraft by 2029. A new Forward Operating Base in Denmark is also scheduled, enhancing support for northern NATO members.

"The participation of Sweden and Denmark underlines the trust in the MMU project, the willingness to jointly expand capabilities and shows that strategic air mobility in Europe is a combined mission," said Col Ludger Bette, Commander of the MMU.

Finland hosts Exercise Atlantic Trident 25

FINLAND HAS staged trilateral exercise Atlantic Trident for the first time, with the Nordic nation hosting aircraft from the UK, France and the United States.

The exercise, which ran from June 16 to 27, aims to further develop Agile Combat Employment (ACE) tactics, techniques and procedures, as well as aircraft cross-servicing and integration among fourth and fifth generation fighter jets.

Joining the Finnish F/A-18 Hornet fighters, were an E-3F AWACS aircraft, Rafale jets, an A400M transport aircraft, and an A330 MRTT tanker from France, RAF Typhoons and US F-35A Lightning II, F-15E Strike Eagle jets and KC-135 Stratotanker aerial refuelling aircraft. The exercise also involved NH90 helicopters and ground-based air defence units from the Finnish Army, as well as aircraft from Draken International, providing adversary air services. In total, the exercise involved more than 40 aircraft and approximately 1,000 personnel.

"Finland is a part of NATO's network of air bases, so we must be prepared to receive Allied reinforcements. We are at the forefront within NATO when it comes to Agile Combat Employment, but close integration with Allies is still relatively new to us," said Col Vesa Mäntylä, Exercise Director and Deputy Chief of Staff, Air Force Command Finland.

A Finnish F/A-18 Hornet taking part in Atlantic Trident 25 *Finnish Air Force*

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665/25

Alan Warnes reports from the Paris Air Show, which took place in sweltering conditions at Paris-Le Bourget Airport on June 16-20.
The focus being very much on Europe as you would expect, although the USAF provided a sizeable presence in the static display.

More strain on FCAS

UNDOUBTEDLY THE biggest story at Paris Airshow was the frustration displayed by Dassault Aviation's CEO, Eric Trappier on the Franco-German-Spain Fighter Combat Air System (FCAS). He spoke to Bloomberg TV at the show, demanding Dassault lead the programme, and naturally Airbus disagrees.

The spat was even on public display, when you consider the FCAS/Next Generation Weapon System mock-up was placed around the side of the Dassault pavilion with no marketing, no futuristic weapons or anyone in sight to talk to or discuss the project.

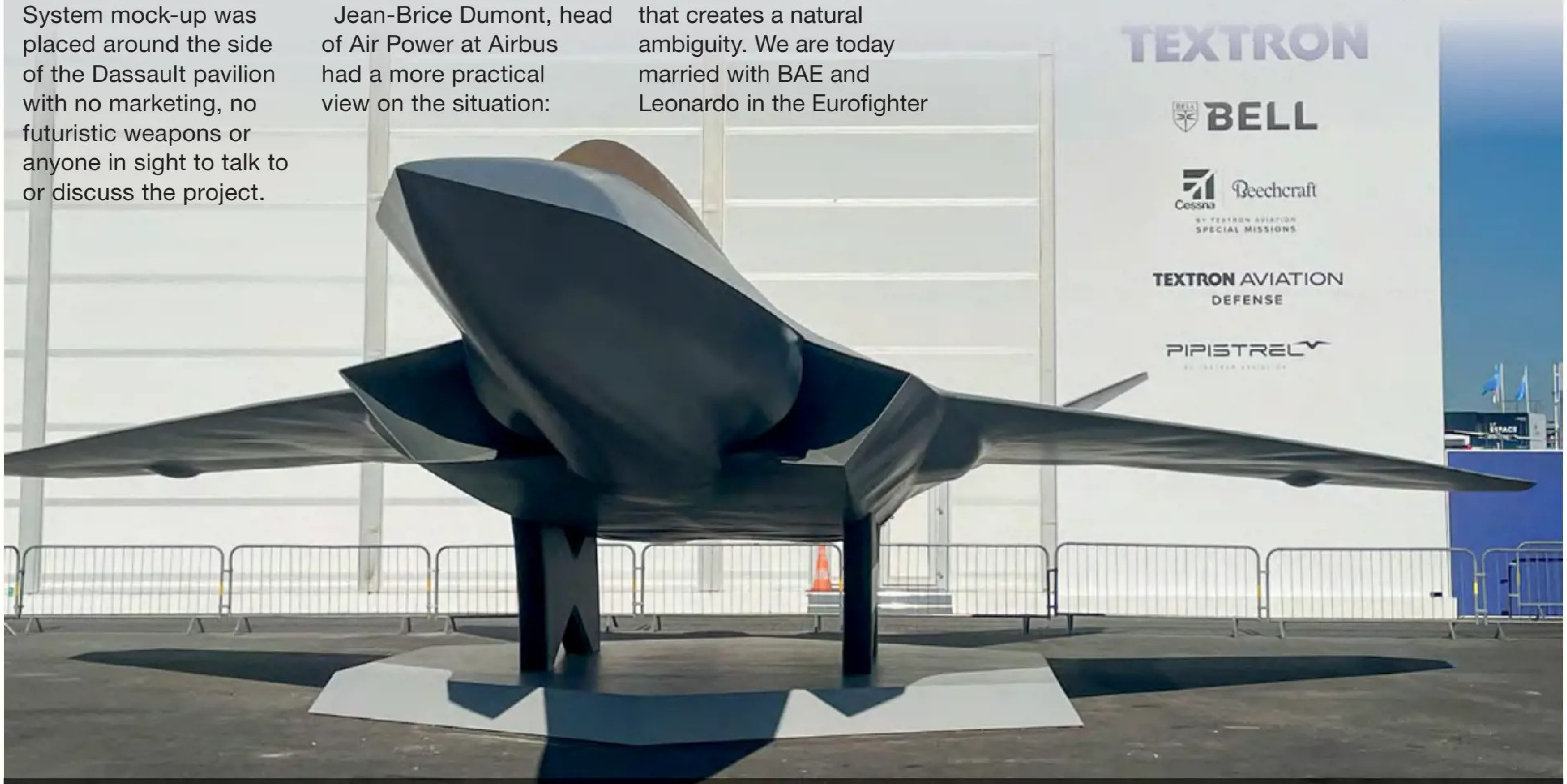
Trappier argued that an arrangement focussing on sharing work, based on the investment by the three governments wouldn't work, that FCAS would be technologically inferior – undoubtedly a view that the other main partner, Airbus (Germany and Spain) found offensive. He said he wasn't prepared to accept a sub-standard fighter incapable of taking on Russians and Chinese because of financial and other considerations.

Jean-Brice Dumont, head of Air Power at Airbus had a more practical view on the situation: "We all have problems with very detailed work shares, which makes life complicated. We need to aim at something which is simple enough, but I believe it's possible with smart work share and the proper rules of engagement.

Dumont then provided some insight into the issues: "At the moment, we have two competitors, because this is what the two companies (Airbus and Dassault) are now and poised to marry. And that creates a natural ambiguity. We are today married with BAE and Leonardo in the Eurofighter programme, tomorrow with Dassault, and the German's transition from one to the other isn't an easy one when you have to protect our IP, and tomorrow we will have to share everything. I believe that's one of the sources of tensions in this program. But we need to observe the political will.

"There must be simplifications in the way this program is shaped. It is shaped a bit – theoretically – because there was no pressing war in 2017 when the program was initiated. So, yes, we need to simplify it. The rules may have to be changed and some elements of work share changed to make the program executable."

The three FCAS partner companies are working on several systems of a system – a future manned fighter, collaborative combat aircraft (CCA) and a network that binds it altogether by 2040.



A mock-up of the French/German/Spanish next generation fighter, that is part of the trio's Future Combat Air System looked discarded. Positioned beside the Dassault pavilion, out of the way with no marketing material or anyone present *All photos, Alan Warnes*

Last Grob 120TP delivered to Sweden

THE SWEWDISH Air Force training command has now taken delivery of its 13th and last Grob 120TP (known as the SK 40 in SwAF service).

Lt Col Claes Bernande, head of Military Flight Training Systems and Planning for the Swedish Air Force, explained: "The SK 40 has replaced the Saab 105 in Phase 2 flying training at Linkoping, which commenced in mid-June. Once student pilots have completed this, they will head to the International Flight Training School (IFTS) at Lecce-Galatina for Phase 3, flying MB 339CDs then progress on Phase 4 and the Leonardo T-346 at Decimomannu, Sardinia.

"The Swedish Air Force was originally expecting to fly the Leonardo M345 in Phase 3, but Swedish students will remain training on the MB 339s until 2029/30."

Issues with the T-345 programme mean that entry into service has been delayed, with the jet being officially inducted into service at Lecce-Galatina on June 12, five years later than planned.

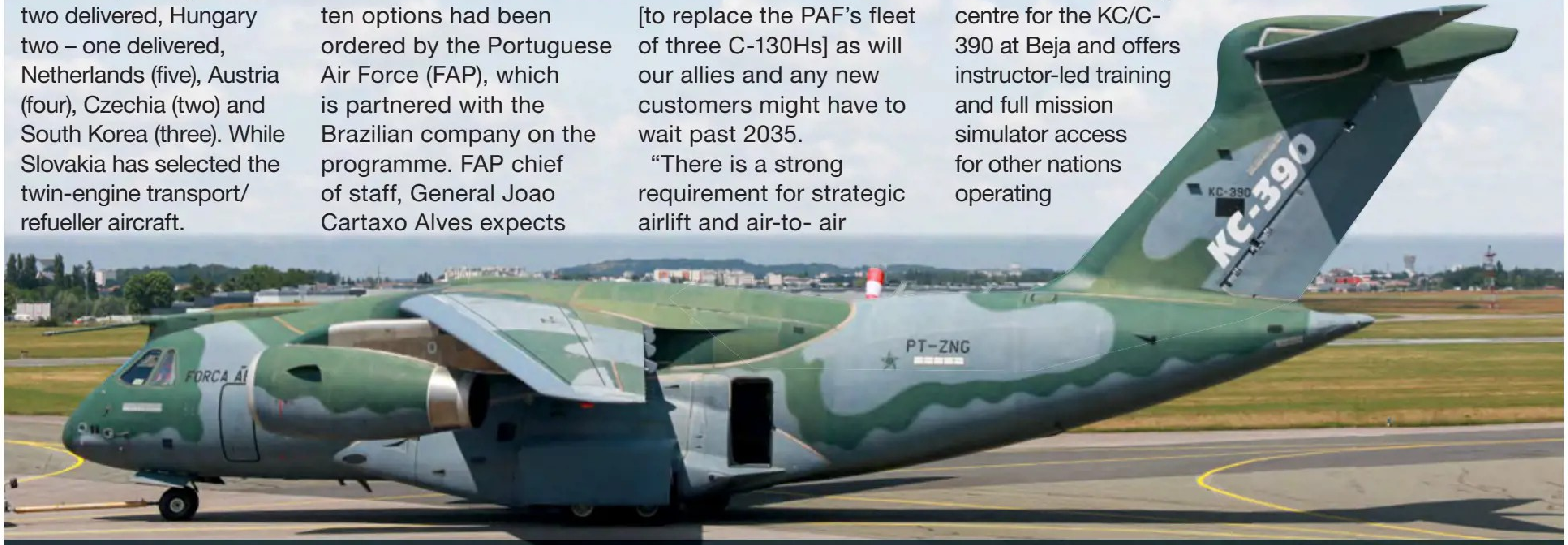
More sales of Embraer KC/C-390

WE HAVE seen an upsurge in KC/C-390 orders over the last couple of years, with 40 now on order with seven countries: Brazil 19 – seven delivered, Portugal five – two delivered, Hungary two – one delivered, Netherlands (five), Austria (four), Czechia (two) and South Korea (three). While Slovakia has selected the twin-engine transport/refueller aircraft.

It wasn't surprising then at the show, that Embraer announced a further sale to Portugal and one for Lithuania. The eye-raiser though came when Embraer announced that ten options had been ordered by the Portuguese Air Force (FAP), which is partnered with the Brazilian company on the programme. FAP chief of staff, General Joao Cartaxo Alves expects the sixth C-390 to be delivered in 2029. In terms of the options, he said: "We decided to reserve the ten additional aircraft because we will probably need more in the future [to replace the PAF's fleet of three C-130Hs] as will our allies and any new customers might have to wait past 2035.

"There is a strong requirement for strategic airlift and air-to- air refuelling and should other countries place orders, we can work the sale out with a government-to-government deal."

The FAP has already established a training centre for the KC/C-390 at Beja and offers instructor-led training and full mission simulator access for other nations operating the aircraft. Cartaxo Alves added: "We are already training the Netherlands and by the end of next week, the Hungarian Air Force will also start its tactical training."



C-390 demonstrator PT-ZNG 2852 wearing Brazilian Air Force markings, is towed down to the flight line from the static display. Embraer announced two confirmed orders at the show to Portugal and Lithuania

Seeking TR3 approval

The USAF sent a 48th Fighter Wing F-35A to participate in the static display, while a 388th FW example appeared in the flying display on the first two days

JUST 12 months ago, Lockheed Martin announced it was starting the delivery of Technical Refresh (TR-) 3 configured F-35s. It came after lengthy delays had caused customers a lot of frustration, but TR-3 with its new core processor, is still not certified or cleared by the Joint Programme Office (JPO), so the jets have been restricted to supporting pilot training.

At the first press conference at the Paris show, JR McDonald, vice-president F-35 strategy and business development, told the media that Lockheed Martin was nearly there. "We believe we have reached that point. We still have one combat capability to go, (without giving away what that was) and while I can't give you a date, that is the only outlier for the final definition."

Lockheed Martin delivered the 200th F 35 in the TR-3 configuration in early June, with McDonald adding: "Once we get the final authority from the government, we'll provide software updates to the operational flight program in the aircraft. There's no need for that aircraft to go anywhere special for that. We'll just download the software.

On the TR-2 to TR-3 update, Lockheed Martin Aeronautics president Gregory M Ulmer said: "There is an extensive plan on how to retrofit the TR-2 aircraft. Obviously, depending on what Lot aircraft you have, there are slightly different retrofits. But as we work through the TR-3 process, we are co-producing TR -3 retrofit kits. The intent is to use contract field teams in each location to do the upgrade so you don't have to lose the use of the aircraft for an extensive period of time."

Baykar and Leonardo form LBA Systems

BAYKAR AND Leonardo announced on June 16 the establishment of a new joint venture dedicated to the development of unmanned technologies. The pair will share a 50/50 partnership and it comes barely three months after the two signed a memorandum of understanding forming LBA Systems. The two parties, which met in October 2024, are clearly keen to get this project moving. Their challenge is to demonstrate the landing of an UAS on the Italian Navy's ITS Cavour aircraft carrier by the end of the year and certification in 2026. Undoubtedly the Seaspray 7500 maritime surveillance radar would be part of any system configuration. Roberto Cingolani, CEO Leonardo, said that both the Bayraktar UASs outside in the static park – Akinci and Bayraktar TB3 come under the agreement with Turkish weapons and Leonardo's sensors. "Right now, our teams are already committed on the integration of the payloads with sensors, and flight control systems."

On why Baykar opted to partner with Leonardo, Selçuk Bayraktar, Chairman and CTO of Baykar Technologies, said: "We've already been working with Leonardo for a long time. Leonardo payloads are great, as are its radars and a whole wide range of avionics. We are both already in the European market, but with this joint venture we can provide better solutions."

LBA
BAYRAKTAR TB3
PT-1

France opts for GlobalEye

ON JUNE 18, France's defence procurement agency (DGA, Direction Générale de l'Armement) announced the Saab GlobalEye had been selected to replace the French Air Force's four 30-year-old Boeing E-3F Airborne Warning and Control System (AWACS). The requirement is for two GlobalEyes and an option for a further two and according to the DGA, the deal is "expected to be finalised in the coming months".

Micael Johansson, President and CEO of Saab, said: "GlobalEye will enhance the French Armed Forces' situational awareness and threat detection across the air, land and sea domains. Our solution will enable France to maintain full sovereign control of its airborne early warning and control capability."

GlobalEye is an advanced multi-domain AEW&C solution with an array of active and passive sensors that provide long-range detection and identification of objects in the air, at sea and over land. By providing real-time information to air forces, armies and navies, GlobalEye enables enhanced situational awareness of the surrounding areas and early detection of threats.

To date the United Arab Emirates Air Force and Defence is the only operator of the GlobalEye (four aircraft), while Sweden has three on order for delivery within the next two years. Having taken the political decision to donate its two ASC890 Erieye systems (on Saab 340s) to Ukraine, the Swedish Air Force is now lacking any AEW&C capability, but as the Swedish Air Force commander said at the Swedish Air Force Fan Club dinner on June 14, the deliveries will come in two steps. "They are a huge benefit for operations in Ukraine, but it's also a loss for us, and that is where we got the decision to take the capability first, and then we need to get full capability later."

Now the future of the USAF's order for 26 Boeing E-7s is in doubt, following comments in mid-May by USAF Chief of Staff Gen David W Allvin, who believes space-based assets could be the solution many air forces will be looking at, with the GlobalEye as an ideal option.

Saab was showing a GlobalEye in the static display, owned by the United Arab Emirates Air Force and Air Defence, which has supported the Swedish company's marketing efforts at several airshows

Saab ties in with GA's MQ-9B

ON THE initial day of the show, the General Atomics stand displayed a well rendered poster of several Airborne Early Warning (AEW) MQ-9B SkyGuardian unmanned aircraft operating from the Royal Navy's HMS *Prince of Wales* aircraft carrier.

This role is currently being carried out by the Merlin Mk2 Crowsnest, a system that will only reach full operational capability next year, but is expected to be withdrawn from use in 2029.

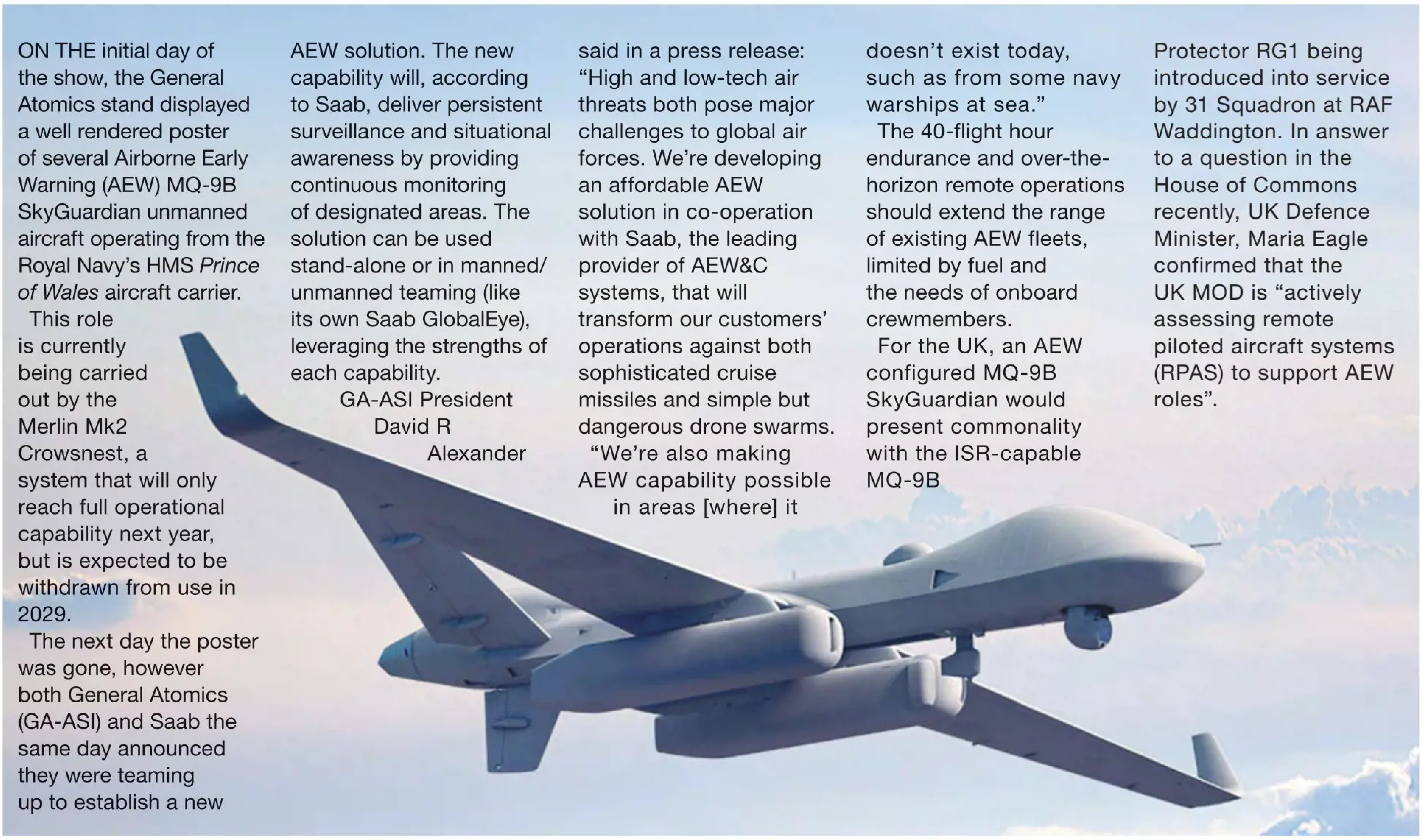
The next day the poster was gone, however both General Atomics (GA-ASI) and Saab the same day announced they were teaming up to establish a new AEW solution. The new capability will, according to Saab, deliver persistent surveillance and situational awareness by providing continuous monitoring of designated areas. The solution can be used stand-alone or in manned/unmanned teaming (like its own Saab GlobalEye), leveraging the strengths of each capability.

GA-ASI President David R Alexander said in a press release: "High and low-tech air threats both pose major challenges to global air forces. We're developing an affordable AEW solution in co-operation with Saab, the leading provider of AEW&C systems, that will transform our customers' operations against both sophisticated cruise missiles and simple but dangerous drone swarms.

"We're also making AEW capability possible in areas [where] it doesn't exist today, such as from some navy warships at sea."

The 40-flight hour endurance and over-the-horizon remote operations should extend the range of existing AEW fleets, limited by fuel and the needs of onboard crewmembers.

For the UK, an AEW configured MQ-9B SkyGuardian would present commonality with the ISR-capable MQ-9B Protector RG1 being introduced into service by 31 Squadron at RAF Waddington. In answer to a question in the House of Commons recently, UK Defence Minister, Maria Eagle confirmed that the UK MOD is "actively assessing remote piloted aircraft systems (RPAS) to support AEW roles".



General Atomics announced a partnership with Saab, to offer an AEW MQ-9B SkyGuardian solution that will interest the Royal Navy

Popular Babcock shows evergreen Albatros

AN L-39C Albatros was taking centre-stage at the Babcock exhibition area. The reason, according to Thierry Caspar-Fille-Lambie, Executive Vice-President military and government affairs, is because Babcock wants to offer training solutions like those it does in France and UK, to African countries. "Their pilots will not fly on the Rafale or on the F 35 but they need a light attack aircraft, focussing on the T-346 or L-39NG, and we want to work with them. Babcock is not focused on just tier one air forces and we are OEM agnostic. We want to support African air forces with a training capability, currently focussing on the L-39C and while we don't have a contract yet, we are in discussions."

Certainly, there was a lot of interest in what Babcock, with its flying training pedigree, can offer, and 29 delegations visited in the first four days of the show.

Babcock provides training solutions for air forces, as has been seen in the UK since 1999, supplying 91 Grob 115E Tutors to the UK armed services under the Military Flight Training Syllabus (MFTS). Since 2018, the company has been working with French Air and Space Force (FASF) to provide modern training systems on flight simulators and 26 Pilatus PC-21 aircraft at Cognac-Châteaubernard Air Base. In January the French company was awarded a 17-year contract for the provision and support of military air training solutions for the FASF. The €795m contract will see student pilots trained on 22 new PC-7MkX and 12 training simulators provided by Babcock at Salon-de-Provence before they specialise in fighter or transport aircraft. The aircraft need to start being delivered in January 2027.

It might be over 50 years old now, but the L-39C Albatros is still in operation by several air forces and Babcock is offering it as a flying training solution to African countries from its Dijon base

L-39NGs deliveries well underway

AERO VODOCHODY continues to develop the integrated training system of the L-39NG, with Israel Aerospace Industries (IAI), focussing more on communications from the ground. The training configuration is finished, and L-39NG production is now focussed on the four aircraft for the Czech Air Force (through CLV) and the Hungarian Air Force (12) although four of the latter are being optimised for reconnaissance.

Two CLV L-39NGs were delivered to Pardubice in February, while the first three for the Hungarian Air Force were flown to Kecskemét on May 31. The next two L-39NGs for CLV should be delivered in early August and the next pair for Hungary, by the end of August, and the last three making all eight, by the end of the year. Both the Czech and Hungarian aircraft are designated L-39NG.T1s.

Trials were being carried out on a tactical pod in late June, but there has been no decision because delivery of the four recce-configured aircraft is not expected until 2028.

One of the unique aspects of the light attack version of the L-39NG is that it can work with both Western and Eastern weapons. Jaromir Lang, the Aero L-39NG aircraft designer, explained: “This is because of modifications we made to the computer system. The Vietnamese aircraft can use the Eastern weapons like rocket launchers and UB16 rockets, and OFAB bombs. We can even offer a mixture, as some potential customers have asked, like Eastern weapons and Western gunpod.”

The Vietnamese Air Force took delivery of 12 L-39NGs in 2023/24, designated the L-39NG. A1, which are light attack versions with two pylons and a maximum take-off weight (MTOW) of 5,370kg including the 350kg fuel tanks. For fully weaponised versions, Aero plans to increase the MTOW to 5,600kg, with five pylons.

Lang is currently devoting much of his time to developing the Western light attack version, utilising all five weapons pylons. “That means building the stores management system and negotiating with weapons suppliers for the integration of the digital munitions and gun pods. Ground testing of the gun pod should commence in the autumn. Next year we should finish the development and fly the fully flyable prototype and at the start of 2027 start the firing tests. We will use prototype 7001 for this work.”

While Hungary is not expected to receive its last four recce configured L-39NGs (likely to be designated L-39NG. R1) until 2027/8, the last L-39NG of the current order book should come off the production line very soon. It is important more orders come and in the latest set of Aero Vodochody’s financial accounts there was a reference to two new customers, but Lang would not say who they are.

CLV
7
Aero L-39NG
0477

A L-39NG.T1 from CLV prepares to take off from Aero Vodochody on June 3. The next pair destined for the company, which trains Czech Air Force pilots, is due in early-August

Up and away with the PC-7MkX

THE PILATUS PC-7MkX is finally starting to clock up the customers. The launch customer is the Royal Netherlands Air Force, which signed up for eight aircraft on February 7, four months after selecting the type. The deal is an integrated solution and includes four simulators to meet the Dutch need for basic flying training. Aircraft deliveries are expected to take place in the first half of 2027. They will replace the current Pilatus PC-7 trainers serving the Royal Netherlands Air Force since 1988, at Woensdrecht, in the south of the Netherlands. While France selected the PC-7 MkX to fulfil its basic flying training needs in January (see Babcock, above) while the re-named Belgium Air Force is set to make an announcement on its future training platform very soon; its looking increasingly likely it will select the PC-7MkX. It would make a lot of sense, seeing that France, with whom they co-operated in the Alpha Jet Training School at Tours until 2020, will be operating the PC-7MkX in 2027.

PC-7 MKX
HB-HHH
HB-FSG
PC-12
SPAC

Over the past six months Pilatus has found a launch customer – the Royal Netherlands Air Force – for its new PC-7MkX trainer, which was soon followed up by the French Air and Space Force. Could Belgium follow?

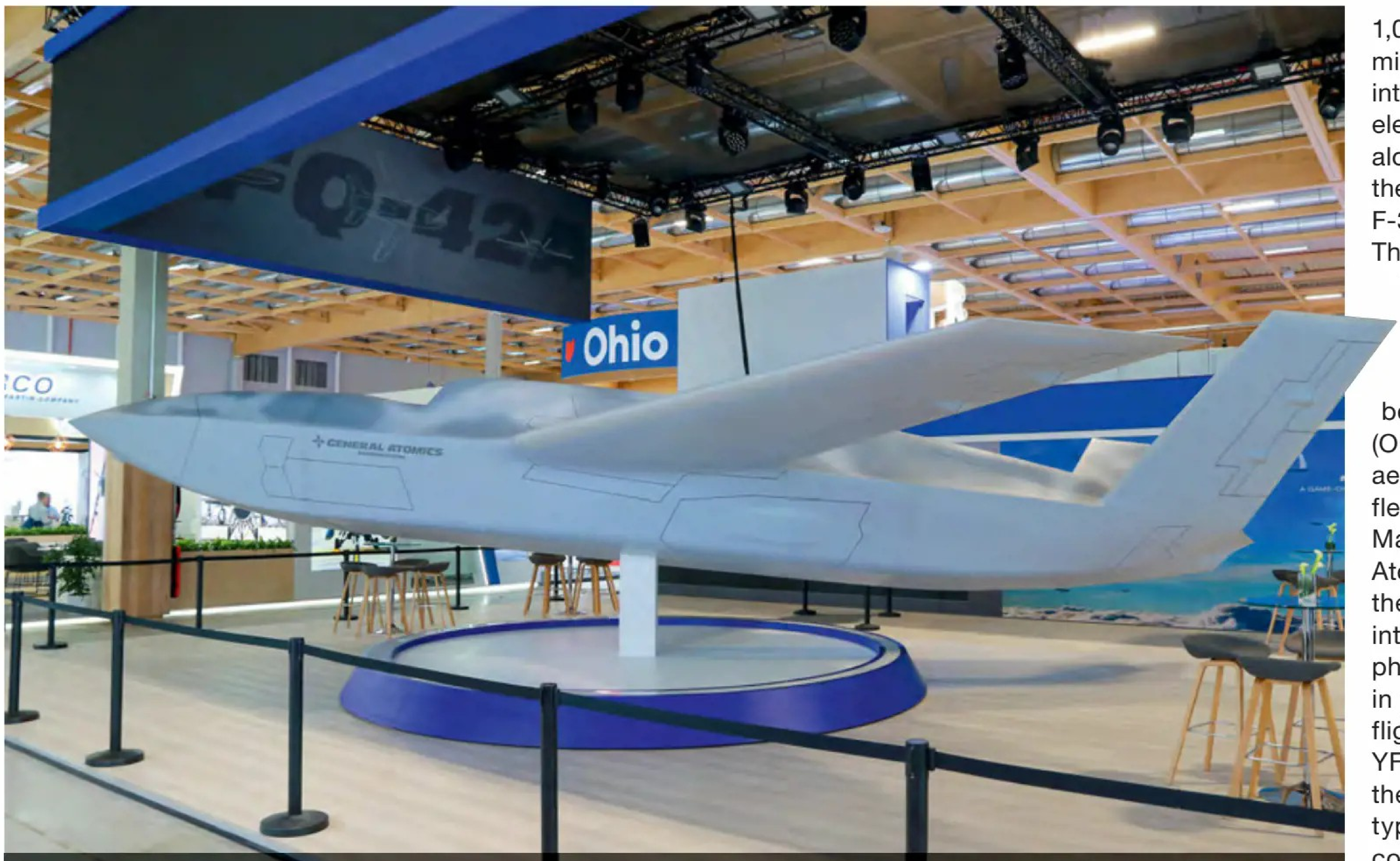
Kaan prototype delayed

TURKISH AEROPSACE general manager Mehmet Demiroğlu announced to media at Paris that production of the first two Kaan prototypes P1, and P2 has now started, with P3 on the verge of commencing. P1 is expected to fly in the first quarter of 2026 and P2 will follow in the middle of 2026, with the third in early 2027.

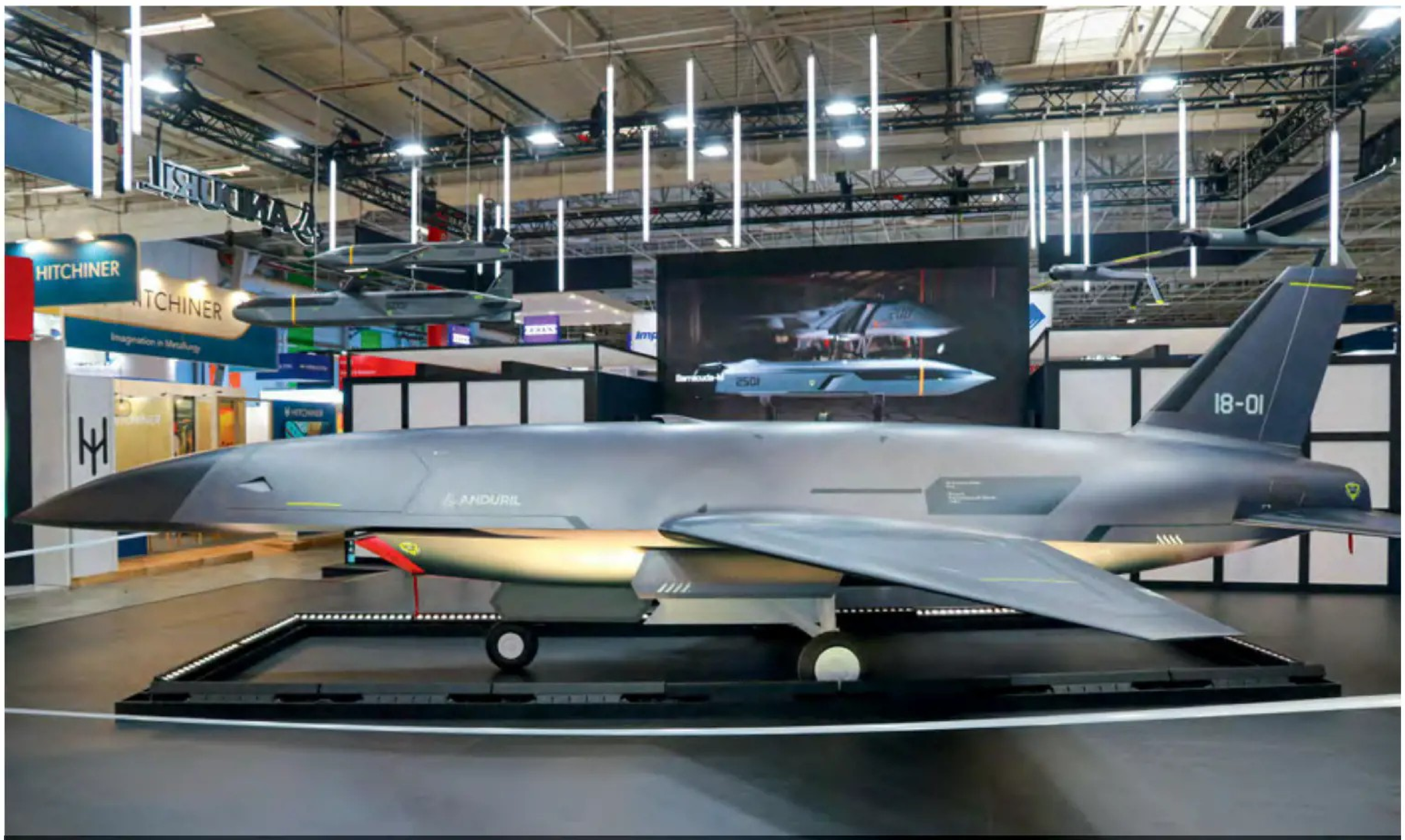
Initially P1 was to be flown by the end of this year, but according to Demiroğlu some “supply chain challenges have meant the dates have been pushed back”. He went on: “The three prototypes will expedite the flight tests, as we have been set a deadline of introducing the aircraft into service in 2028. As a result, another three Kaans will be built and used in the test programme then delivered to Turkish Air Force.”

On Indonesia’s requirement for 48 Kaans valued at over $8bn, Demiroğlu insisted that it was an order placed on June 11, despite doubts. “The deal will be finalised over the next couple of months when the technical requirements are finalised. We have signed a contract defining the number of aircraft, technology transfers and offset requirements in general. We are now discussing more details and will finalise it in a couple of months.”

Both downselected USAF CCAs on display



A full-scale model of the General Atomics' YFQ-42A collaborative combat aircraft was on display at its stand. CCAs are being designed to increase combat mass at the fraction of the cost of acquiring fifth-/sixth-generation fighters. The first system should fly this summer.



Anduril Industries is a software tech company and it is also expecting to fly its YFQ-44A Fury in the summer. Game on!

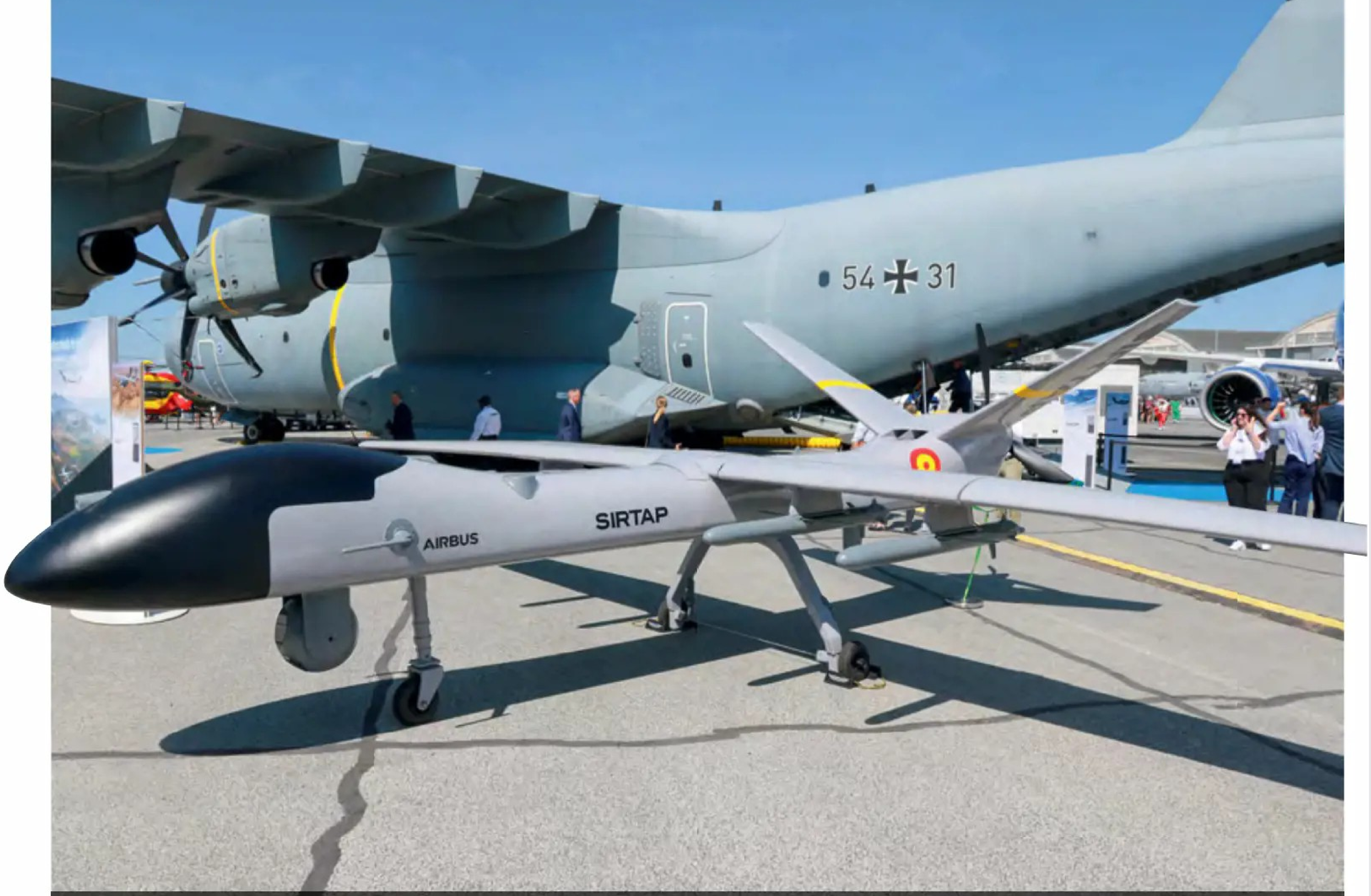
BOTH THE collaborative combat aircraft (CCAs) downselected by the USAF in April were on display in full scale form. The General Atomics YFQ-42A and Anduril's YFQ-44A (often referred to as 'Loyal Wingman') are being viewed as a less expensive option to fifth-/sixth-generation fighter options, with the USAF wanting to boost its combat mass. The USAF wants a fleet of about 1,000 CCAs to offer the military more options in intelligence, strike and electronic warfare, flying alongside the likes of the Lockheed Martin F-35A and Boeing F-47 Thunderbolt III.

The General Atomics candidate is similar in configuration to the XQ-67A Off-board Sensing Station (OBSS) UAV (unmanned aerial vehicle) which flew in June last year. In May this year, General Atomics announced that the YFQ-42A had moved into the ground testing phase of development in preparation for a first flight later this year. YFQ-42A represents the third uncrewed jet type developed by the company. The internally funded MQ-20 Avenger made its first flight in 2009 and has completed more than 40,000 flight hours, currently serving as a jet-powered CCA surrogate for autonomy development and critical advancements in artificial intelligence and machine learning integration.

Anduril Industries, a defence technology company specialising in autonomous systems, certainly doesn't have the UAS lineage of General Atomics. Its YFQ-44A Fury also began ground testing last month at Beale Air Force Base in California, focussing on propulsion, avionics, autonomy, and ground control interfaces, with a view to taking its first flight in the summer. The company signed a strategic partnership at Paris with Germany's Rheinmetall to collaborate on the joint development of autonomous air systems and propulsion systems for Europe.

Airbus SIRTAP UAS close to first flight

The Airbus SIRTAP unmanned aerial system was being shown for the first time at an international airshow. Being developed as a surveillance and close air support platform, the first prototype has completed development and is expected to make its first flight at the end of the year. A second prototype is now in production and will be used to test the mission systems. The Spanish military is keen to take the new system on board, having ordered 27 such systems and nine ground stations in late November 2023, in a deal close to £500m. With a maximum take-off weight of just 800kg, it is fairly light and a payload of 200kg means that it can carry several smaller laser-guided bombs or laser-guided munitions.



The prototype SIRTAP on display will make its first flight by the end of the year. The Spanish armed forces have 27 on order

SEAD/DEAD development on Gripens

AT THE Swedish Air Force Fan Club dinner on the eve of the Paris Airshow, the SwAF admitted it was looking seriously at increasing the Gripen Es electronic warfare capability, particularly in the Suppression of Enemy Air Defences/ Destruction of Enemy Air Defences roles.

"That's not too surprising given what we are seeing in Ukraine," Col Fredrik Susskind, lead officer for SwAF Gripen development, told *AFM*: "This is an urgent requirement in Europe, to complement what the USAF is offering.

"We are investigating together with FMV [Swedish Defence Materiel Administration] how to further develop the Gripen Echo in terms of these capabilities. Electronic Warfare/SEAD/DEAD options are definitely among the areas being developed in the upcoming Gripen E road map."

While he wouldn't be drawn into what weapons could be used, like the Northrop Grumman AARGM (Advanced Anti-Radiation Guided Munition), he did admit it was being considered. Susskind finished: "This could be in the systems aboard the 60 Gripen Es in the initial order or could be fulfilled as an additional contract but that would be a political decision to procure more weapons."

In Brief

■ IN ADDITION to the 56 C295s on order by the Indian military, it appears an additional 15 C295s have been ordered – six for the Coast Guard with Optimare India integrating its Aero Mission system, while the Navy has a requirement for nine.

■ BELL SIGNED a fleet purchase agreement with the Tunisian Air Force for 12 Subaru Bell 412EPX on June 16. It is the first order for this Bell 412 variant in the region. According to Bell "this builds on recent successes with the Japan Coast Guard, San Diego Fire and Rescue, Croatia Ministry of Interior, Sarajevo Canton Ministry of Interior, and more.

■ EUROFIGHTER GMBH CEO, Jorge Tamarit Degenhardt, announced it was increasing the production rate of the Eurofighter from 14 per year to 20 within 36 months and could eventually reach 30 if new orders are received. Recent contracts include 25 Halcon II for Spain, 20 Tranche 5s for Germany and 24 for Italy to replace Tranche 1s. While the company continues with campaigns in Saudi Arabia (48), Turkey (40), Poland (30), and Austria (12).

■ LEONARDO AND Boeing Defense launched a collaboration to explore sales opportunities for maritime multi-mission aircraft on June 17. The platform would include Leonardo's Airborne Tactical Observation and Surveillance (ATOS) system with a choice of its sensors.

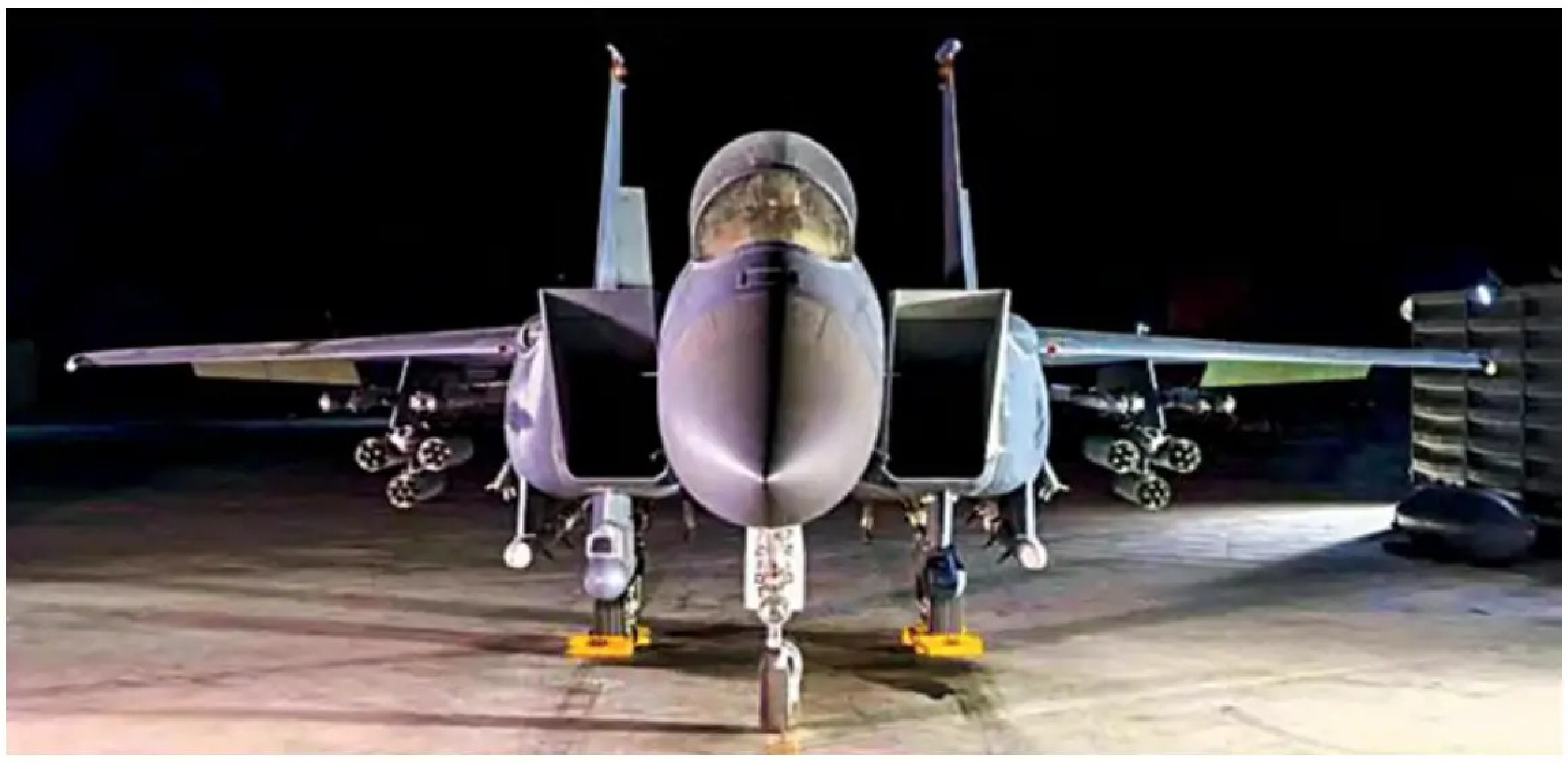
For more images from Paris airshow see page 92-93

Anti-drone Strike Eagles revealed

AN IMAGE of a Boeing F-15E Strike Eagle configured for the counter-unmanned air vehicle (UAV) role has been released by US Central Command (CENTCOM).

The deployment of the aircraft armed for the mission to the region was confirmed by the Command at the end of May 2025. Strike Eagle s/n 87-0210 of the 389th Fighter Squadron 'Thunderbolts', 366th Fighter Wing, based at Mountain Home Air Force Base, Idaho, was depicted in a night-time photograph, armed with six LAU-131A/A rocket pods under the wings. Each pod contained seven AGR-20 Advanced Precision Kill Weapons System II (APKWS II) laser-guided rockets, giving the Strike Eagle a total of 42 shots. The aircraft also carried four AIM-9X Sidewinders, plus four AIM-120 Advanced Medium Range Air-to-Air Missiles (AMRAAMs).

The Strike Eagles of the 389th Fighter Squadron have been deployed to CENTCOM's area of responsibility. The initial aircraft arrived in theatre on October 9, 2024, in response to Iran's ballistic missile attack on Israel at the start of the month and the killing of the Lebanese Hezbollah leader Hassan Nasrallah. No indication of where the unit is based in the Middle East has officially been given, although the squadron is understood to be operating from Muwaffaq Salti Air Base in Jordan. The facilities at the base were expanded by the United States from 2019 and have regularly housed deployed Strike Eagle squadrons.



US Air Force Strike Eagle 87-0210, armed with six LAU-131A/A rocket pods in a photo recently released by CENTCOM *US Central Command*

Ace of Spades fly final Harrier II mission

MARINE ATTACK Squadron VMA-231, marked the end of an era when it flew its final AV-8B Harrier II flight at Marine Corps Air Station Cherry Point, North Carolina, on May 29. Known as the Ace of Spades, the squadron has been associated with the Harrier since 1973 when it received the AV-8A model. It later transitioned to the AV-8B Harrier II in 1985. The squadron's AV-8Bs supported numerous major overseas operations that included Operations Desert Shield, Desert Storm, Allied Force, Odyssey Dawn, Inherent Resolve, and most recently, Prosperity Guardian. Following the final flight, the squadron's colours were cased in preparation for its deactivation in September. The squadron will transition to the F-35B and be reactivated in 2026 as Marine Fighter Attack Squadron VMFA-231. VMA-231's final flight leaves the VMA-223 'Bulldogs', also based at Cherry Point, as the final Marine Corps AV-8B squadron.

Tom Kaminski

AV-8B+ 165587 taxies during VMA-231's final flight ceremony at MCAS Cherry Point, North Carolina, on May 29, 2025. VMA-231 conducted the ceremony to celebrate its last Harrier flight before its deactivation in September *USMC/ LCpl Bryan Giraldo*

US Navy F-35Cs make history in Japan

FOR THE time ever, the US Navy F-35Cs have operated at Iwo To, Japan. Stationed aboard the USS *George Washington*, the Lightning II aircraft from Carrier Wing 5, flew to Japan to participate in Field Carrier Landing Practices (FCLPs) from May 19-31, 2025. It has gained the Navy's only forward deployed air wing another important qualification. The FCLP qualification is required for all pilots of fixed wing aircraft, who are assigned to the USS *George Washington* and includes F-35C Lightning IIs, F/A-18E/F Super Hornets, EA-18G Growlers and E-2D Hawkeyes.

A US Navy F-35C Lightning II assigned to Strike Fighter Squadron (VFA) 147 prepares to land during a field carrier landing practice (FCLP) at Iwo To, Japan, May 25, 2025 *USN/PO2C Dyxan Wi*

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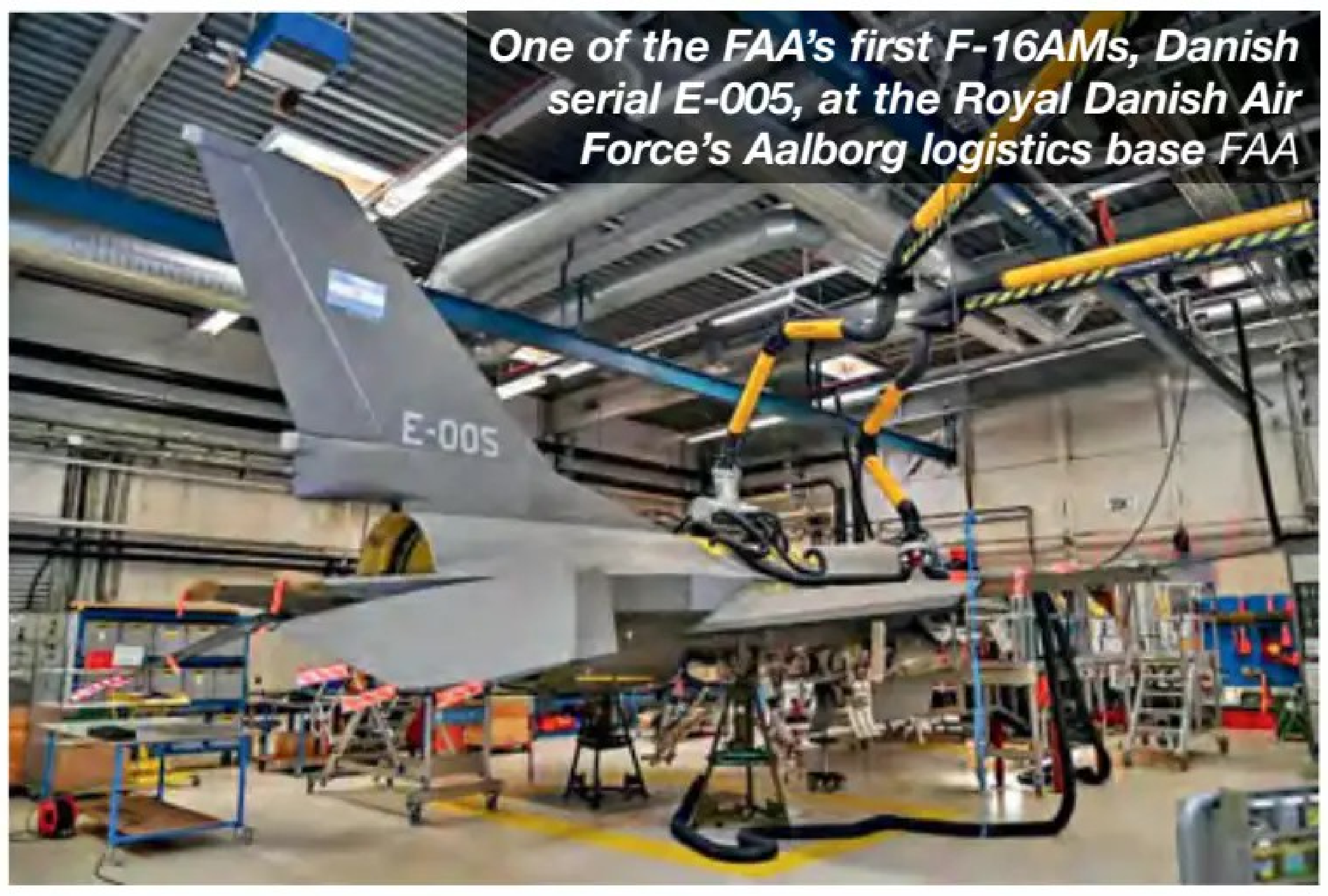
Argentina and Terma pen deal



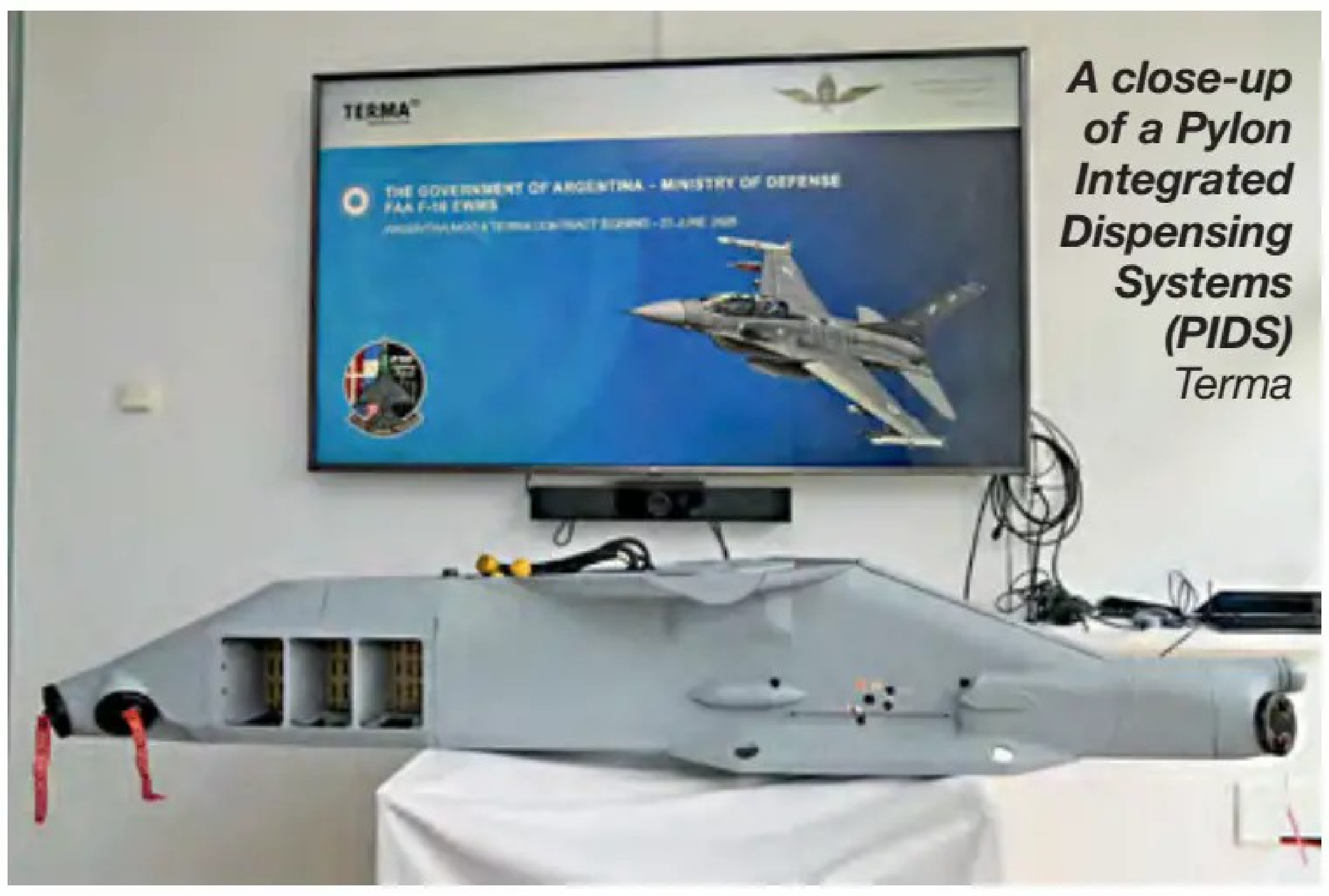
One of the FAA's first F-16AMs, Danish serial E-005, at the Royal Danish Air Force's Aalborg logistics base FAA

ARGENTINE DEFENCE Minister Luis Petri and Henriette Hallberg Thygesen, CEO of the Danish company Terma, have signed a contract for the provision of electronic warfare systems, software and hardware upgrades, mission planning tools, ground support equipment and technical assistance for F-16 Fighting Falcons for Argentina's air force.

Some aspects remain private, but the agreement on June 25 includes the provision of a batch of new Pylon Integrated Dispensing Systems (PIDS) that integrate missile warning systems and chaff and flare launchers, among other systems, in addition to maintaining their weapons launch capability. Unspecified electronic warfare systems are included to give them more capacity for survival in combat and dominance against their opponents, making them the most capable F-16s in Latin America.

Argentina's defence ministry also showed that the tuning and modernisation work on the first six aircraft is progressing as planned, with delivery expected by December 2025.

Santiago Rivas



A close-up of a Pylon Integrated Dispensing Systems (PIDS) Terma

First four Super Tucanos for Paraguayan Air Force

IN A ceremony held on June 30 at the headquarters of the I Air Brigade at the Silvio Pettirossi International Airport, the Paraguayan Air Force received its initial four Embraer EMB-314 Super Tucanos (A-29) from a batch of six purchased new in Brazil – initiating a new era for the force, receiving its first new fighter aircraft purchased since six Embraer EMB-312 Tucanos were received in 1987.

The version of the Super Tucano acquired by Paraguay is an export model that has fully digital instrument panels with two multifunctional colour liquid crystal screens, a synthetic package that expands on-board training capabilities; chaff/flare launchers; external armour; laser rangefinder; ability to use laser-guided bombs; a camera that provides conventional and MX-15 thermal imaging; and night-vision goggles. Initially, the fleet will use conventional weapons, having acquired 12 launchers for seven LAU-32 rockets of 70mm each, as well as general-purpose bombs.

The first four Embraer EMB-314 Super Tucanos from a batch of six purchased from Embraer Paraguayan Air Force

The contract includes logistical support with spare parts and scheduled maintenance, as well as stations for mission planning, training and briefing.

The aircraft have the serials FAP 1101 to FAP 1106 and will be used to equip the FAP Air Tactical Group of the 1st Air Brigade.

The main mission of these aircraft will be the surveillance of the airspace for aircraft on illegal flights, and patrol, air strike, close air support and reconnaissance.

Ecuador buys an additional Bell 206B-3

The new Ecuadorean Navy Bell 206B-3 Jet Ranger Guayaquil Naval Air Station Ecuadorian Navy

THE ECUADORIAN Navy incorporated a new Bell 206B-3 Jet Ranger helicopter into the Naval Aviation Command, to be used for training, surveillance, reconnaissance and light transport tasks in Ecuador's maritime space. The helicopter will be based at Guayaquil Naval Air Station.

Among its rotary wings, the force currently uses a fleet of three Bell 206B-3 Jet Rangers, to which the new example is added, plus three Bell TH-57As, two Bell 407s, one Bell 230 and four Bell 430s.

Guyana Tecnam on delivery

A VERY rare delivery flight went through Lelystad Airport in the Netherlands on June 4. A Tecnam P2012 Pro STOL aircraft made a stop after departing Bergamo in Italy earlier that day. The aircraft, wearing the civil registration of I-PDVA, was en route to be delivered to the Guyana Defence Force.

GUYANA DEFENCE FORCE
STOL

Guyana Defence Forces Tecnam on the ramp at Lelystad Dino van Doorn

Carabineros de Chile receives a new Airbus H135

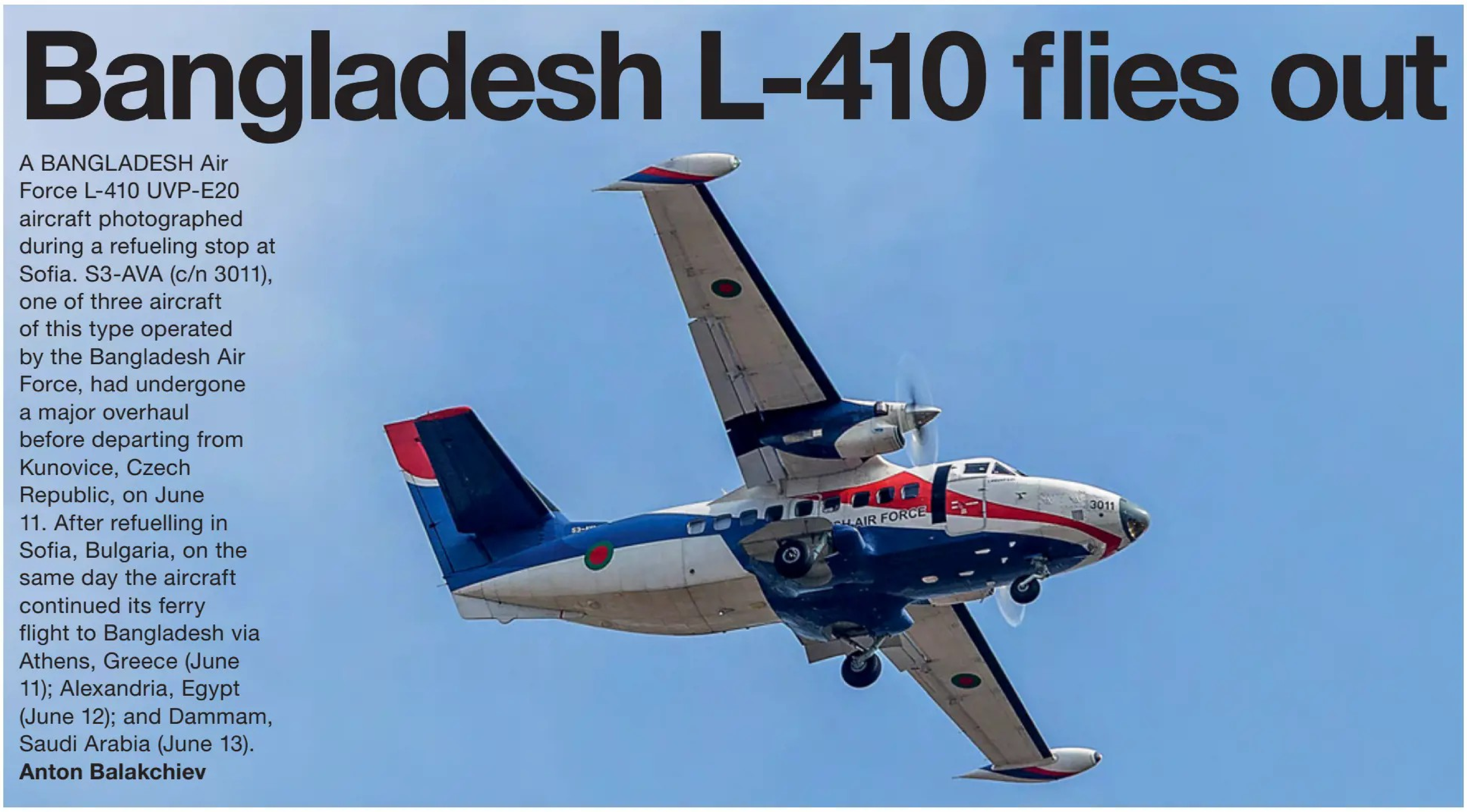
A NEW Airbus H135 helicopter is being delivered to the Carabineros de Chile, to join the other three examples of the model already in service (a EC135P2+ and two H135s, the last of which was delivered in December 2024). The aircraft was recently painted at the Airbus facilities in Albacete and sent to Germany for tuning and test flights before being sent to Chile.

The aircraft received the serial C-33, which is striking since until now the correlative registrations of the police force's rotary-wing aircraft reached C-31, so it is likely that another unit with the serial C-32 will be delivered, although this was not reported by Airbus or the Carabineros.

Epic journey for Vietnamese Texans

THE NEXT two T-6 Texans for the Vietnamese Air Force flew an easterly route to Vietnam in mid-June. They left the Beechcraft factory at Beech Field, Wichita, Kansas on the June 13 and had made it to Zagreb, Croatia, six days later, where these shots were taken on June 19 having come via Sault Ste Marie Canada, Goose Bay Canada, Nuuk Greenland, Keflavik Iceland, Glasgow Scotland and Lyon France. They departed Zagreb on the June 20 for Heraklion Greece, with Hurghada Egypt their next destination. The aircraft were 608 with ferry registration N2792B and 609 carrying N2808B. This is the first time Zagreb has been used enroute although 606 and 607 went via Split, Croatia on the last delivery.
Chris Lofting

Bangladesh L-410 flies out



A BANGLADESH Air Force L-410 UVP-E20 aircraft photographed during a refueling stop at Sofia. S3-AVA (c/n 3011), one of three aircraft of this type operated by the Bangladesh Air Force, had undergone a major overhaul before departing from Kunovice, Czech Republic, on June 11. After refuelling in Sofia, Bulgaria, on the same day the aircraft continued its ferry flight to Bangladesh via Athens, Greece (June 11); Alexandria, Egypt (June 12); and Dammam, Saudi Arabia (June 13).
Anton Balakchiev

Ghost Bat flies in Australian exercise

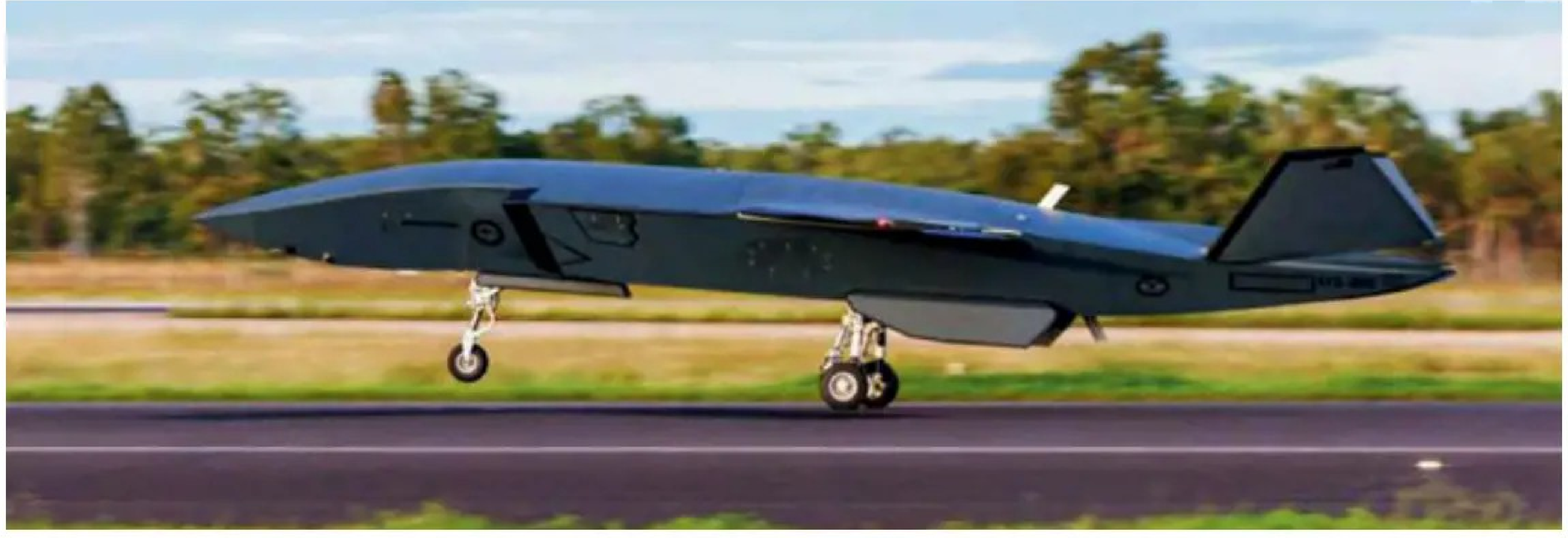
EXERCISE CARLSBAD wrapped up at RAAF Base Tindal on June 23 after the successful deployment and operation of Australia's MQ-28A Ghost Bat unmanned aerial combat vehicle (UAV) in the Northern Territory.

The exercise is part of a series of test events held throughout 2025 that will mature and exhibit the capabilities of the UAV. It successfully demonstrated that the MQ-28A can operate away from Woomera Training Area, South Australia, which to date has been the air operating location.

A developmental aircraft designed and manufactured by Boeing Defence Australia, the MQ-28A is the first military aircraft designed in Australia in more than 50 years.

The project has funded eight initial MQ-28A variants for test and evaluation, the development of mission payloads and the fundamental knowledge, skills and experience in integrated system behaviour and autonomy to operationalise collaborative combat aircraft (CCA).

A further three MQ-28A Block 2 aircraft, with enhanced design and improved capability as well as a ground control station, will be delivered.



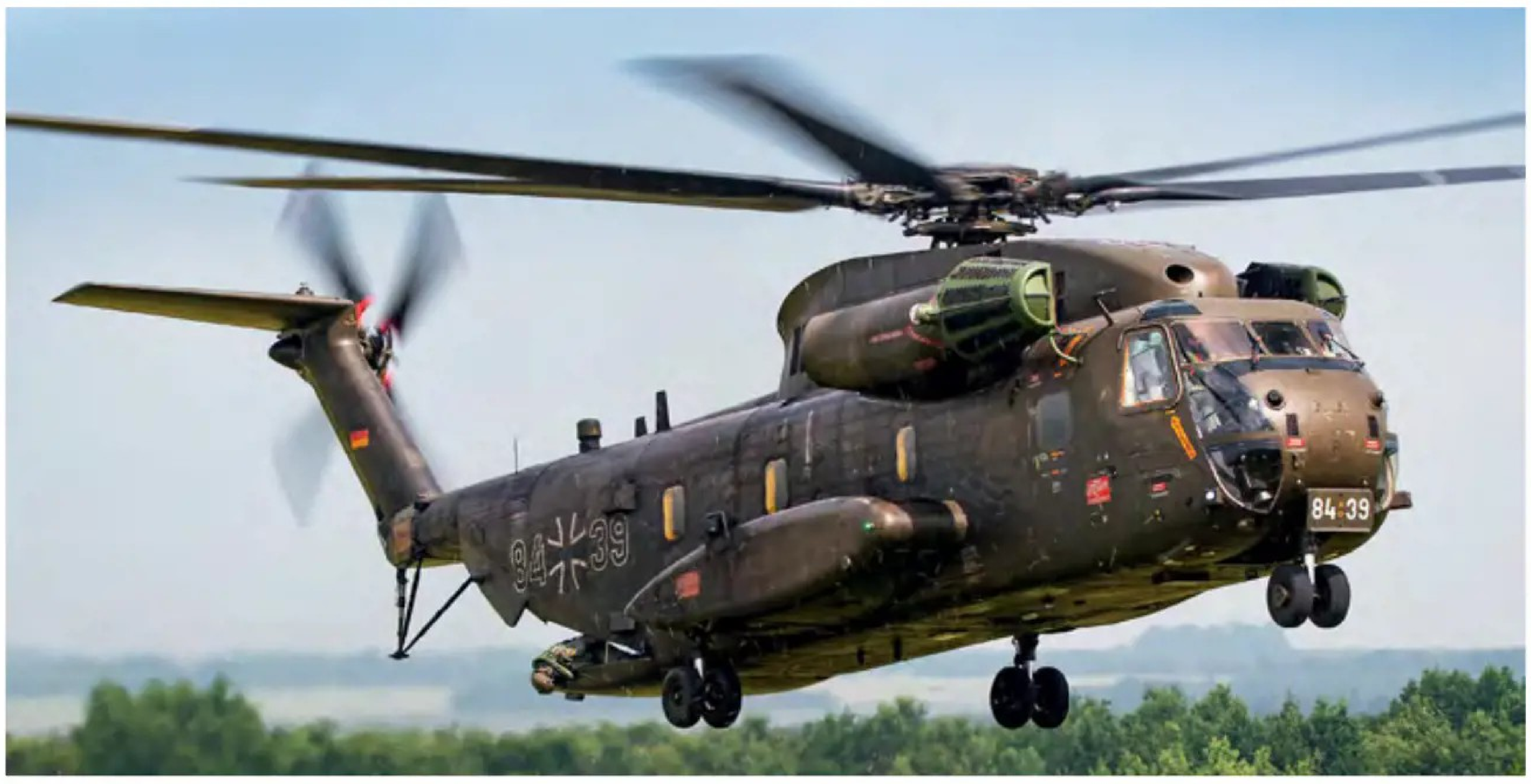
An MQ-28A Ghost Bat takes off for flight testing during Exercise Carlsbad at RAAF Base Tindal
RAAF/Leading Aircraftman Ryan Howell

Just Passing Through

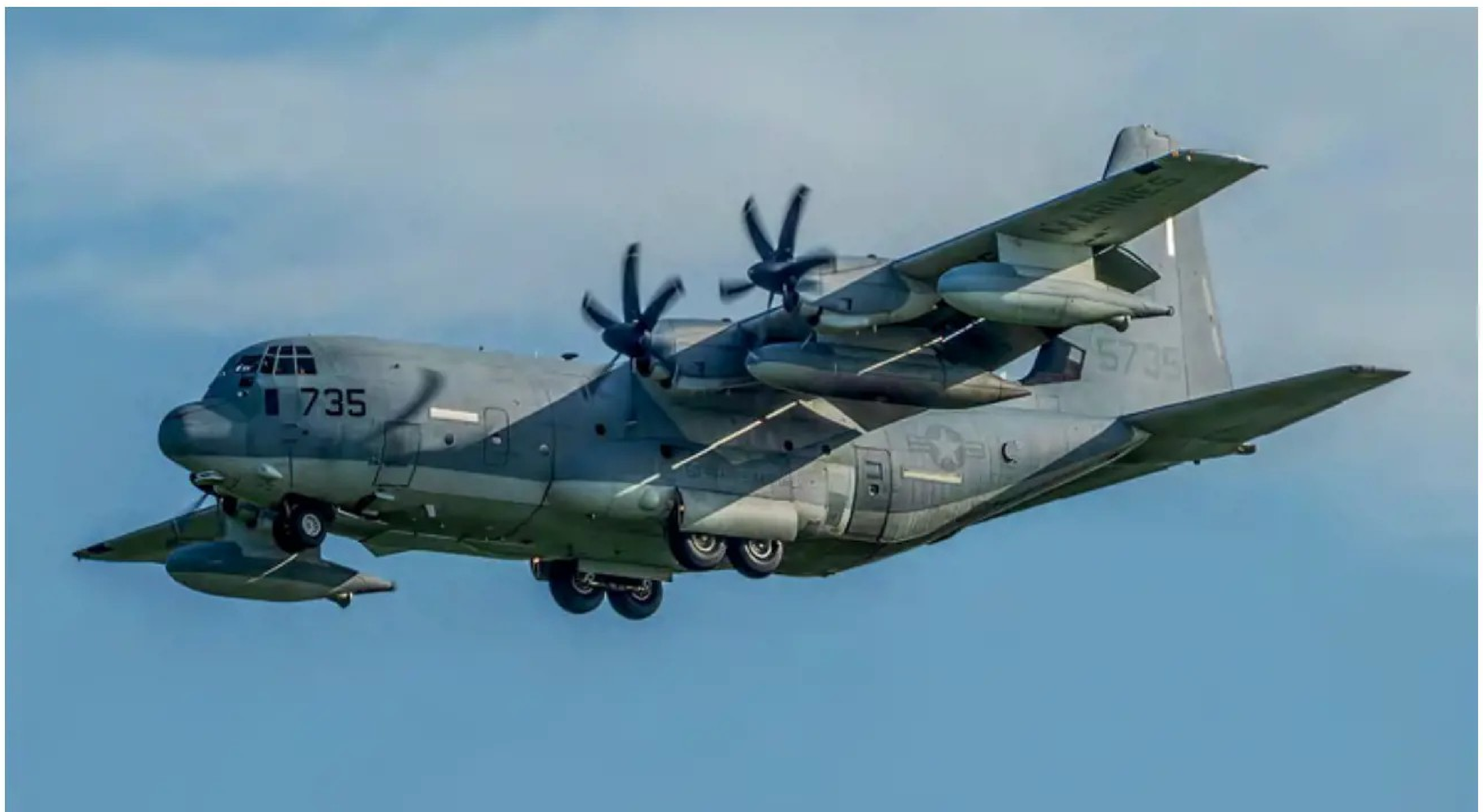
Ben Stanley Hall showcases the rich diversity of aircraft movements up and down the UK

This month's movements are dominated by transport aircraft and in particular, ones belonging to the United States. Which isn't surprising with what's happening in the Middle East. Six C-17s, including a Qatari example, feature this month as well as a pair of C-130s. The outliers are a beautiful Draken L-159E en route to Italy and a German CH-53GS that spent a short time in the UK.

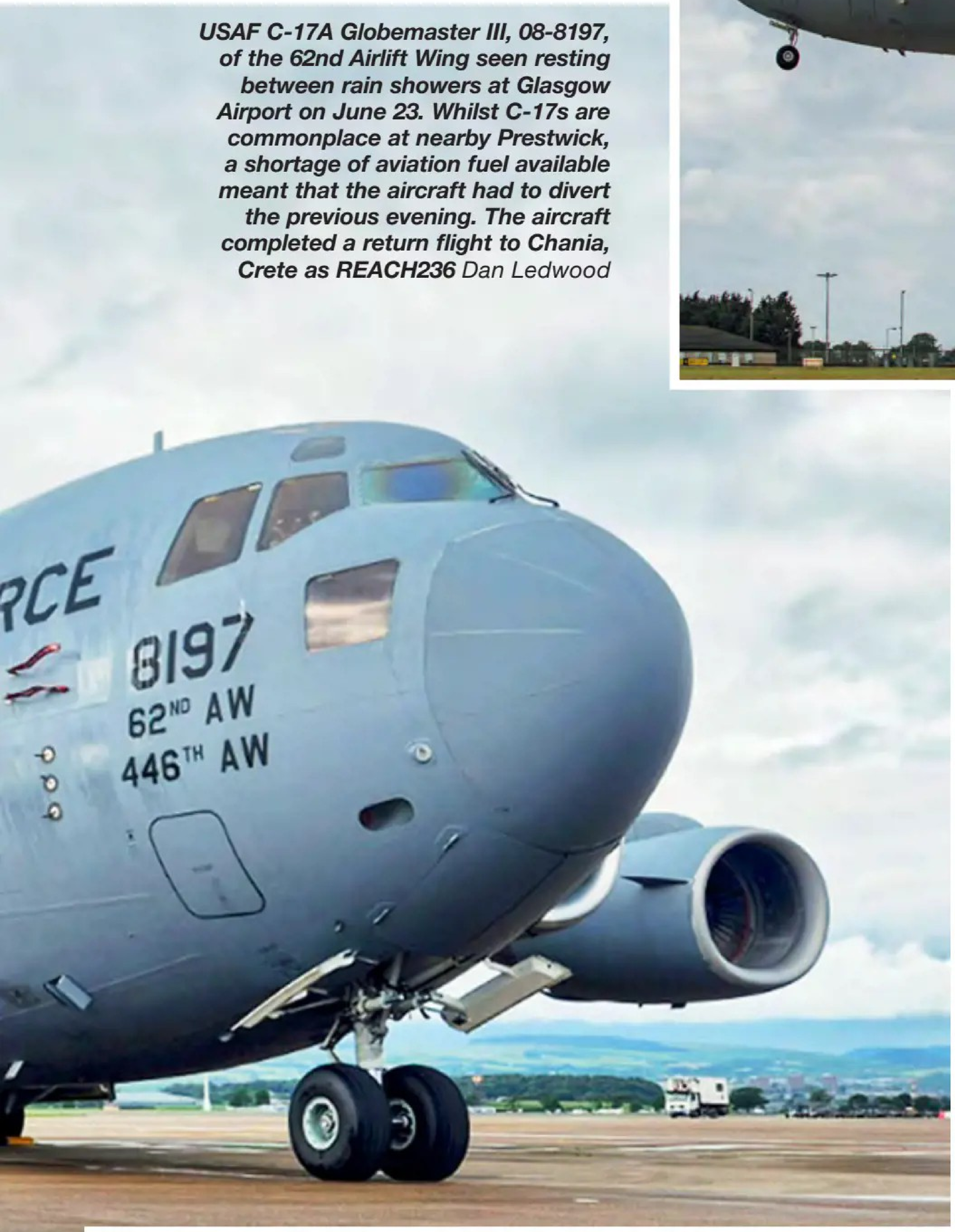
We welcome contributions from readers across the world. If you photograph an aircraft that is not in its usual location or could be of interest, please email your images, without watermarks, to ben.hall@keypublishing.com using the subject heading 'Just Passing Through', with a short caption including as much information as possible. **afm**



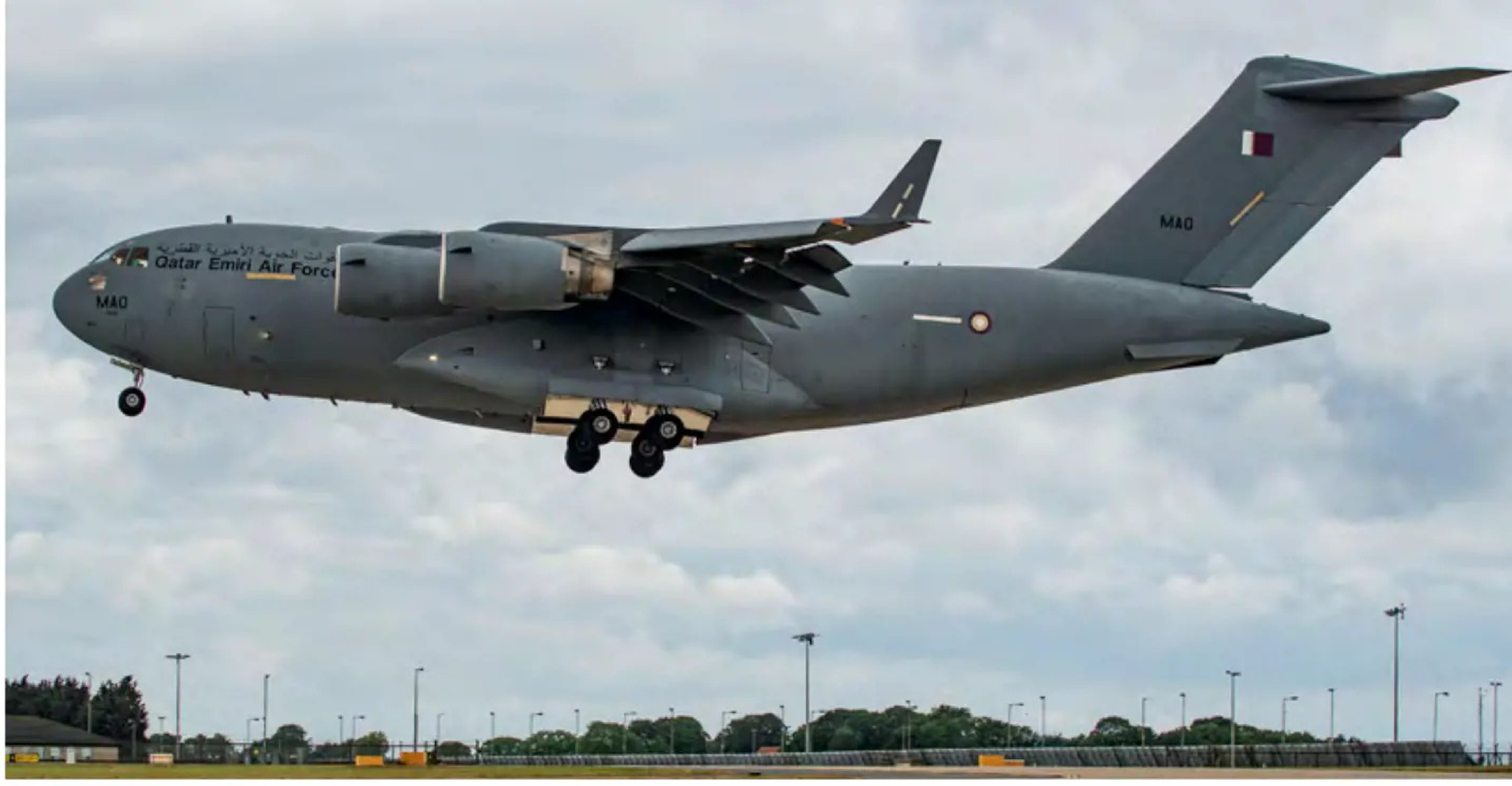
Above right: ***This German Air Force Sikorsky CH-53G 84+39 briefly conducted operations within the Salisbury Plain Training Area (SPTA) on June 11 during a very brief visit to the UK in order to gain an invaluable insight into RAF Chinook Force operations ahead of receiving the type in the near future*** *Chris Gilligan*



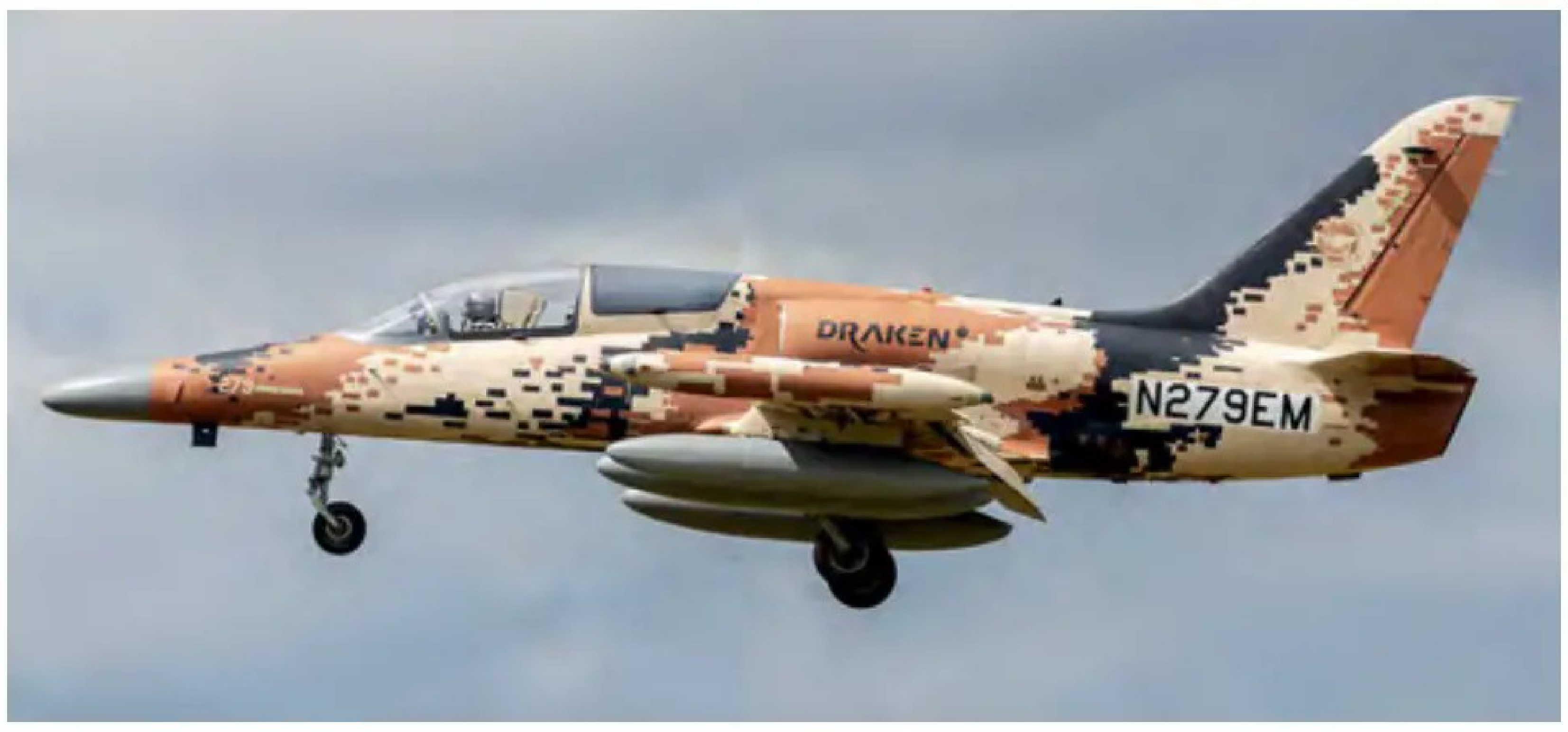
Rihgt: ***Arriving at Belfast is this USMC KC-130J Hercules, 165735/'QB-735', from VMGR-352 'Raiders'. The aircraft arrived from Cambridge on June 20 as RAIDER23 after a period of maintenance at Marshalls*** *Michael Lyke*



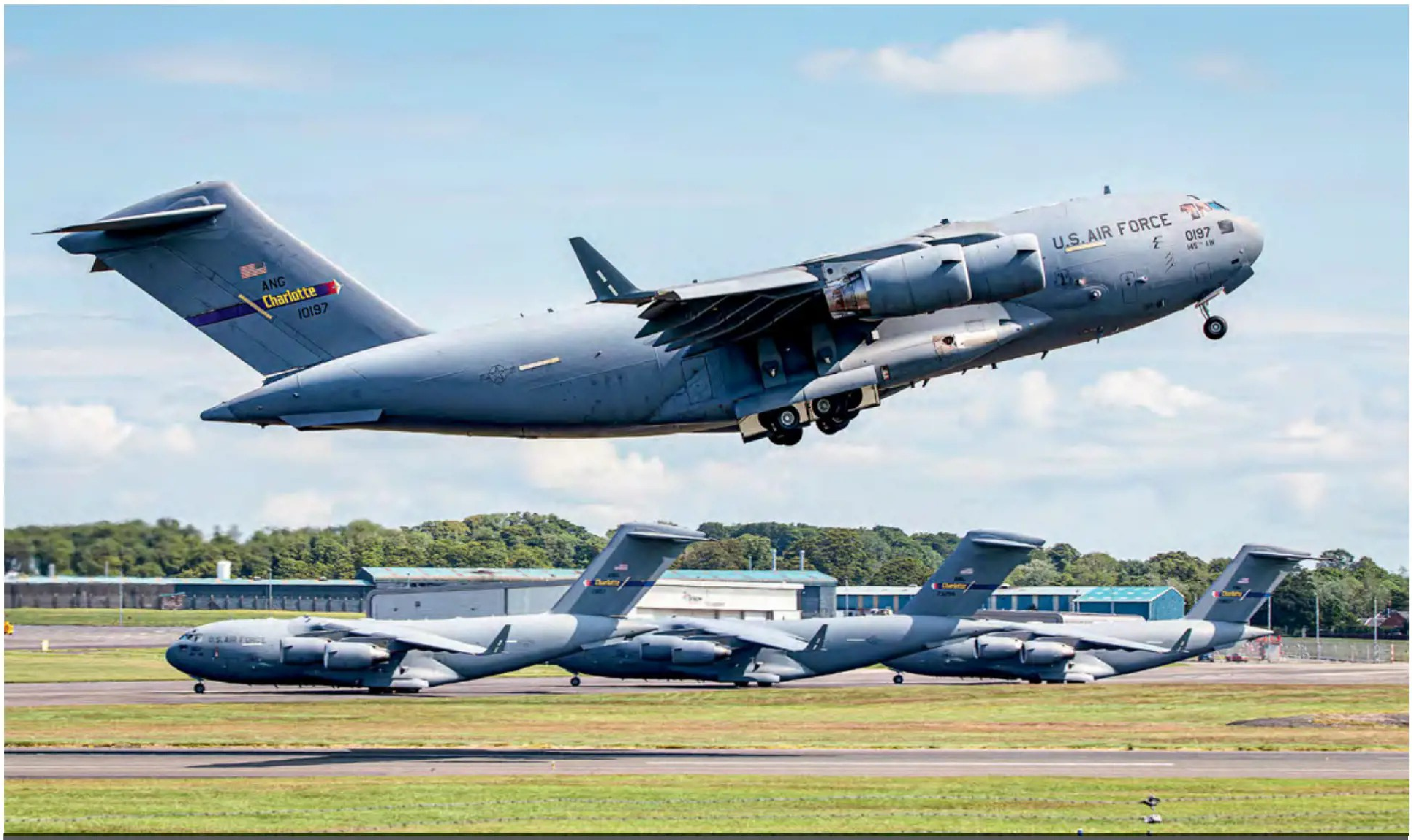
USAF C-17A Globemaster III, 08-8197, of the 62nd Airlift Wing seen resting between rain showers at Glasgow Airport on June 23. Whilst C-17s are commonplace at nearby Prestwick, a shortage of aviation fuel available meant that the aircraft had to divert the previous evening. The aircraft completed a return flight to Chania, Crete as REACH236 *Dan Ledwood*



C-17A Globemaster III, A7-MAO, arrived at RAF Waddington just after midday, Monday, June 23 using callsign LHOB245. The aircraft arrived direct from Qatar and is believed to be supporting a 12 Squadron deployment to the tiny Arab state. The same day C-17A A7-MAN c/s LHOB247 arrived at RAF Lossiemouth, and A330-203 QAF4/A7-HHM operated by the Qatari Amiri Flight VIP Airline flew to London Heathrow. All three were probably connected to the RAF Typhoon deployment. *Mike Hiley*



This L-159E Honey Badger was one of four to arrive at Teesside International Airport on the afternoon of June 2024 for an overnight stop. The jets took several days to transit eastward across North America, with a routing that included Kinston Regional Jetport, NC, Bangor, ME, Keflavik, Iceland. They departed for Grosseto, Italy, the next day. The aircraft are currently registered as N263EM, N271EM, N273EM, and N279EM (pictured) but are due to change to UK registrations very soon *James Mawson*



USAF C-17A, 01-0197, using callsigh REACH830, departed Prestwick Airport on June 19. The aircraft, from the 156th Airlift Squadron, a component of the North Carolina Air National Guard based at Charlotte-Douglas, was one of four that were routing through Scotland on their was to Paphos, Cyprus *Nigel Patrick*

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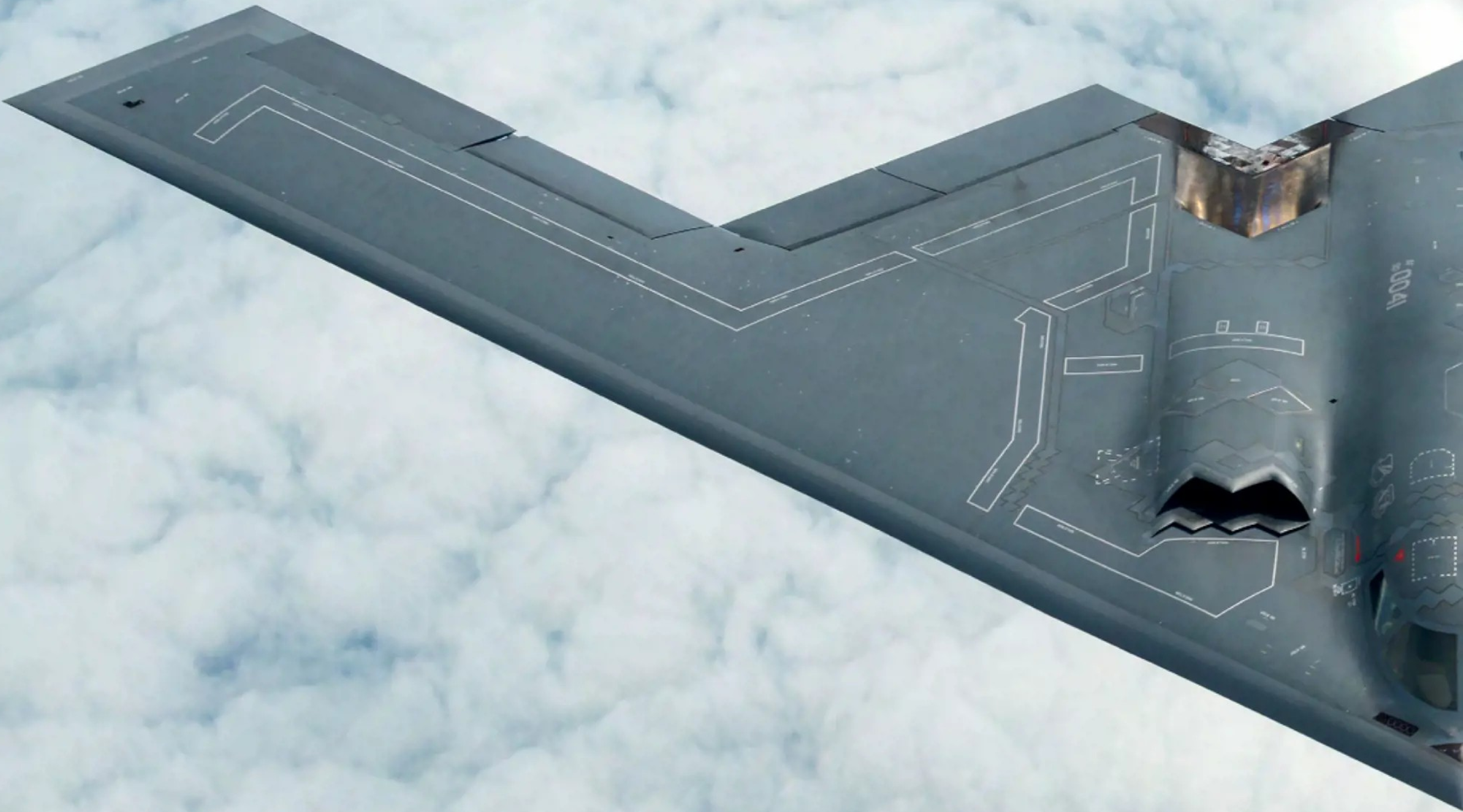
673/25

Crushing Iran's nukes

Just as it had threatened to, the US bombed Iran's military nuclear sites on June 21 after a week of relentless and systematic Israeli strikes. **Babak Taghvaee** looks in depth at the bombing campaign



Operation Midnight Hammer marked the largest combat deployment of B-2A Spirit stealth bombers in USAF history. On June 22, 2025, 15 B-2s launched from Whiteman AFB – eight acting in a deceptive move and seven for strikes on Iran's underground nuclear facilities at Natanz and Fordow *SrMSgt Vincent De Groot/USAF*

THE AIR forces of Israel and the United States executed a co-ordinated military campaign that has seriously damaged the Islamic Republic of Iran's military nuclear program. The twin operations – Israel's Operation Rising Lion and the United States' Operation Midnight Hammer – were launched in June, approximately one month after US President Donald Trump's ultimatum demanding the immediate cessation of uranium enrichment by the Iranian regime expired (see *Targeting Iran*, June, p32-39). The operations were aimed at terminating the militarised nuclear ambitions of the Islamic Republic and delivered a severe blow to the offensive and defensive capabilities of Iran's armed forces.

Mobilisation of Israeli forces

Operation Rising Lion began on June 13 and involved the deployment of over 1,000 agents from Israel's foreign intelligence agency, Mossad, operating covertly inside Iranian territory. This extensive intelligence operation was paired with the near-total mobilisation of the Israeli Air and Space Force (IASF), including its entire inventory of combat aircraft and aerial refuelling assets. In its initial phase, the IASF executed a series of offensive counter-air (OCA) and suppression/destruction of enemy air defences (SEAD/DEAD) missions, striking key installations belonging to the Islamic Revolutionary Guard Corps (IRGC). Precision airstrikes resulted in the elimination of several senior IRGC commanders and nine Iranian nuclear scientists, while degrading infrastructure at Iran's key nuclear sites in Isfahan, Natanz, Fordow, and Arak.

Israel's offensive effectively set the stage for the subsequent American operation. Operation Midnight Hammer, conducted on June 22, centred on a single strategic bombing mission by seven B-2A Spirit stealth bombers, supported by F-22A Raptor and F-35A Lightning II fighters. This strike package was reinforced by precision-guided cruise missile launches from USS *Georgia* (SSGN-729), a nuclear-powered guided-missile submarine. The American objective was to neutralise Iran's most heavily fortified and deeply buried uranium enrichment facilities, installations previously assessed as impervious to conventional air attack.

Elimination of generals and scientists

Operation Rising Lion focussed on the elimination of senior IRGC commanders and nuclear scientists to disrupt Iran's military and scientific leadership. On June 13, the IASF, guided by precise intelligence provided from Mossad JTAC (Joint Terminal Attack Controller) teams, eliminated Chief of Staff Mohammad Hossein Bagheri, IRGC Commander Hossein Salami, and Khatam al-Anbiya and Constructions Headquarters Commander Gholam-Ali Rashid in airstrikes on their residences. Strikes at an underground command post of the IRGC Aerospace Force (IRGCASF) killed its Commander Amir Ali Hajizadeh, Commander of its drone command Taher-Pour, and commander of its air-defence command, Davoud Shaykhian.

The IRGC personnel eliminated in the first wave of the operation were mostly asleep in their luxury homes in North Tehran. Those who lived in top floors were by air-launched ballistic missiles such as Golden Horizon (employed by the F-15A/B/C/D Baaz and F-15I Ra'am), while those in lower floors of the residential buildings were targeted by Delilah 2 cruise missiles employed by F-16I Sufa to minimise collateral damage. Over 20 civilians living in these buildings were also killed.

On June 17, Major-General Ali Shadmani, appointed as wartime Chief of Staff after Rashid's death, was killed, alongside over 20 IRGC commanders, including intelligence officials Mohammad Kazemi, Mohammad Hassan Mohaqiq, Mohsen Bakri, and Abu al-Fadl Nikouei.

The operation also targeted Iran's nuclear expertise, eliminating nine senior scientists on June 13 and 14 across Tehran, including Fereydoun Abbasi, Mohammad Mahdi Tehranshi, and Saeed Barji, who were pivotal in advancing Iran's nuclear weapons program. On June 21, a tenth scientist, Isar Tabatabai-Qamsheh, was assassinated, reportedly by an Israeli drone in Tehran. These eliminations targeted hideouts and

residential complexes, such as the Shahrak-e Mahallati compound of the Iranian Ministry of Defence and Logistics of the Armed Forces (MODAFL). Mossad's reported use of precision weapons and a covert drone base near Tehran underscores Israel's sophisticated intelligence and operational capabilities.

The aim has been to disrupt Iran's command-and-control structure and nuclear knowledge base. The loss of senior IRGC figures, responsible for missile attacks and proxy co-ordination, may weaken Iran's ability to orchestrate retaliatory strikes or support groups like Hamas and Hezbollah. However, Iran's appointment of replacements, such as Shadmani, (albeit killed four days after being appointed) indicates resilience in its military hierarchy. The elimination of scientists may represent a long-term setback, but Iran's potential to recruit new expertise and the risk of retaliatory escalation, fuelled by public outrage, complicate Israel's objectives. The operation's focus on leadership decapitation thus balances immediate tactical gains with the challenge of managing Iran's response and regional dynamics.

In response to Operation Rising Lion, the IRGC launched hundreds of intermediate-range ballistic missiles at Israel, including Emad missiles equipped with precision-guided re-entry vehicles, as shown here *Mehran Samavati*

SEAD/DEAD

On April 19 and October 26, last year, the IASF conducted two operations. The first involved two F-15I Ra'am, one launching a pair of Golden Horizons (Blue Sparrow-based missiles) to destroy a 64N6E 3D phased-array long-range surveillance and target acquisition radar of an Iranian Air Defence Force (IRIADF) S-300PMU-2 long-range air-defence system in the IRIAF 8th Tactical Fighter Base (TFB) Babaiee in Isfahan.

Two more 64N6E radars, as well as other components of two other IRIADF S-300PMU-2 batteries and air-defence systems were destroyed during the IASF's Operation Days of Repentance in and around Tehran, on October 26 last year.

On June 13, the absence of the IRIADF's long-range surface-to-air missile (SAM) systems, particularly the S-300PMU-2s, provided a safe passage for both the F-35I Adir fighter jets and the non-stealth fighter jets such as F-16C/Ds, F-16Is, F-15A/B/C/Ds and F-15Is. Among these, the F-35Is focused on eliminating the short- and medium-range IRIADF air-defence systems and the IRGCASF key military and nuclear sites. The IRGCASF Tabas and 3rd Khordad medium-range SAM systems and Tor M1 short-range SAM systems were the most common examples to be targeted and destroyed, firstly by the F-35Is and then armed MALE (medium-altitude long-endurance) drones such as Eitan and Hermes-900. This came at the cost of at least six to IRGC Qaem-118 and Model-358 anti-drone missiles between June 14 and 22.

Suppression and Destruction of Enemy Air Defence (SEAD/DEAD) operations were critical to Operation Rising Lion, enabling the IASF to achieve air superiority over Iran. On June 13, the IASF conducted a large-scale strike on Iran's air defence network in western Iran, destroying dozens of radar installations and SAM systems. By June 17, over 70 Iranian air defence missile batteries were neutralised, with additional strikes targeting detection systems and SAM sites across Tehran, Isfahan, and southwestern Iran. Mossad's sabotage of air defence systems, including the use of covert drones, complemented IASF efforts, ensuring minimal resistance to Israeli aircraft operating over 1,000 miles from Israel.

The tactical execution of SEAD/DEAD operations involved multiple waves of strikes, with IASF fighter jets and remotely piloted aircraft identifying and neutralising launchers and radars embedded in civilian infrastructure. These operations enabled sustained strikes on nuclear and military targets.

The destruction of air defence infrastructure limited Iran's ability to protect its airspace, exposing its vulnerability to further attacks. However, Iran's dispersed and concealed defence systems, combined with potential support from allies like Russia, could be rejuvenated. The integration of Mossad covert operations with IASF kinetic strikes exemplifies a hybrid warfare approach, but the ongoing need to target regenerating defences underscores the campaign's prolonged nature. Israel's ability to maintain air superiority has been critical to achieving its broader objectives.

Airstrikes on IRIAF's Tactical Fighter Bases

Operation Rising Lion included OCA operations targeting the IRIAF's 1st, 2nd, 3rd, and 4th TFBs in Tehran, Tabriz, Hamadan, and

874
852
881
803
891
At Hatzerim AB on the first day of Operation Rising Lion, June 13, F-16I Sufa strike fighters from the Israeli Air Force's 107th 'Knights of the Orange Tail' Squadron, armed with GBU-39/B Small Diameter Bombs prepare for their mission over Iran *Israeli Air Force*

Dezful. On June 13, the IASF struck the 2nd TFB Fakkouri in Tabriz International Airport, disabling its runways and destroying at least three MiG-29B fighter interceptors, a MiG-29UB combat trainer and five F-5E/F Tiger IIs. Strikes on June 16 and 21 neutralised two full-scale F-14A decoys in 1st TFB Lashgari in Tehran and three airworthy and grounded F-14As in 8th TFB Babaiee, respectively, while June 22 saw the destruction of two F-5Es on quick reaction alert (QRA) duty at 4th TFB Vahdati in Dezful.

The IRIAF's 3rd TFB Nojeh near Hamedan and the Habibi Forward Operating Base (FOB) in Mashhad were targeted on June 14 and 15 respectively. In the 3rd TFB, multiple hardened aircraft shelters, a QRA facility and an aircraft hangar were bombed and ten airworthy F-4E Phantom IIs and a single RF-4E Photo Phantom were destroyed. A Boeing 707-3J9C (KC-707) tanker was destroyed by a Golden Horizon air-launched ballistic missiles. These operations, involving over 200 fighter jets and 330 munitions in the initial wave, aimed to cripple Iran's air combat capabilities.

The tactical success of these strikes lies in their precision and scale, with the IASF leveraging intelligence to target IRIAF assets, including aircraft and runways, to prevent interception of Israeli aircraft and then B-2A bombers which took part in Operation Midnight Hammer on June 22. The destruction of ageing IRIAF platforms, such as F-14As and F-5Es, significantly weakens Iran's ability to challenge Israel's air superiority. The strike on the IRIAF's FOB at Mashhad's Shahid Hashemi Nejad International Airport on June 15, targeting the KC-707, marked one of the IASF's longest-range operations, highlighting its operational reach and co-ordination.

On June 18, the IASF targeted and destroyed eight Iranian Army Aviation (IRIAA) Bell AH-1J Cobra attack helicopters and a Bell 214A Isfahan utility helicopter at the 1st Combat Base of Kermanshah in the west of Iran. The Israeli Defence Force (IDF) later claimed these helicopters were involved in an interception and shoot-down of an Israeli armed drone, without providing any proof.

F-35I Adir stealth fighters played a critical role in neutralising short- and medium-range air defence systems of the IRGC Aerospace Force during the opening hours of Operation Rising Lion. This image, taken at Nevatim AB, shows an F-35I returning from its mission over Iran on June 13, 2025 *Israeli Air Force*

The IRIAF's limited role in Iran's broader defence strategy, which prioritises ballistic missiles and one-way attack drones (IRGCASF Shahed-136s and Iranian Army Ground Force Arash-2s), suggests these strikes were secondary to targeting IRGC assets.

The psychological impact of striking deep within Iran, including civilian airports, amplifies Israel's message of deterrence but risks fuelling anti-Israel sentiment. The ongoing nature of Operation Rising Lion indicates plans to target additional IRIAF assets, ensuring that Iran's air capabilities remain suppressed, though the focus on missile and nuclear threats remains paramount.

Destroying ballistic missile bases

Operation Rising Lion prioritised the destruction of the IRGC's ballistic missile bases, targeting Iran's primary means of long-range power projection and retaliation against Israel. On June 13, the IASF, guided by intelligence from the IDF Intelligence Directorate, initiated strikes on dozens of missile launchers and storage facilities in western Iran, including a unique launch mechanism embedded in shipping containers.

By June 16, the IDF reported destroying 120 surface-to-surface missile (SSM) launchers, one-third of Iran's total, with further strikes on June 17, 18, and 20, targeting sites in Tabriz, Kermanshah, Isfahan, and Ahvaz. By June 19, the IDF claimed to have neutralised two-thirds of Iran's missile launchers. These operations involved over 200 fighter jets, including F-16C Block 40 Barak multi-role fighter jets deploying 330 munitions including BLU-109/B bunker buster bombs in the initial wave, with subsequent strikes using Eitan and Hermes-900 armed MALE drones and precision munitions like Mikholit missiles, as evidenced by strikes on 35 missile storage and launch sites in Tabriz and Kermanshah on June 20.

On June 14, the IAF struck an underground facility in Kermanshah containing storage tunnels and launch shafts for ballistic and cruise missiles, previously showcased in Iranian propaganda. Real-time intelligence enabled the destruction of ready-to-launch missiles, such as an Emad intermediate range ballistic missile (IRBM) on a missile launcher on June 18, and the neutralisation of launch cells, including a group of the IRGC personnel and an IRGC base commander on June 20, responsible for 15 launchers.

Mossad's activities are said to have forced the IRGC to relocate operations from the west to central Iran. This shift, corroborated by IRGC-affiliated sources, reflects the significant degradation of launch platforms in the west of Iran, including ground-based, underground, and silo-based systems, compelling the IRGCASF to rely on less secure and less optimal ballistic missiles in central regions of Iran.

These strikes are likely to disrupt the IRGC's military doctrine, which heavily

Despite being nearly 50 years old, this F-15A Block 17 from the Israeli Air Force's 133rd 'Knights of the Twin Tail' Squadron (aircraft 663, callsign 'Ha'Madlik' meaning 'The Lighter') participated in the mission to intercept Shahed-136 one-way attack drones over Jordan on June 13 *Israeli Air Force*

3-6077
IRIAF

At the start of the Iran-Israel war on June 13, only five airworthy F-14A Tomcat interceptors remained in service with the IRIAF's 8th TFB Babaiee in Isfahan. On June 21, the Israeli Air Force used a Hermes 900 drone to destroy two decoys and one operational F-14A at the base *Babak Taghvaee*

F-16C Block 40s of the Israeli Air Force's 101st 'First Fighter' Squadron, based at Ramat David AB, participated in airstrikes targeting underground IRGC ballistic missile bases in western Iran, particularly near Kermanshah, from the beginning of Operation Rising Lion *Babak Taghvaee*

emphasises ballistic missiles as a deterrent and offensive tool. Stockpiles of advanced missiles were destroyed, such as the Kheibar Shekan and Fattah-1, positioned on the northwestern and western flanks aimed at Israel, forcing reliance on older missiles like the Emad, Shahab-3, and Qadr, with poorer accuracy.

Iran's strategy of launching large salvos of 30–50 missiles, starting with older models then limited numbers of advanced systems, aims to overwhelm defences but highlights the scarcity of newer missiles. The IDF's estimate that the IRGCASF possessed 2,500 missiles in June, with potential growth to 8,000 by 2027, underscores the urgency of these strikes, as does the elimination of key IRGC figures.

Despite these successes, Iran retains residual missile capabilities, seen by the launch of over 100 missiles and 470 UAVs towards Israel during the operation, indicating that its arsenal, though degraded, remains operational. The IRGC's claims of resilience, such as the ability to shift operations to central regions, suggest a degree of adaptability, though at reduced efficiency. The potential for the IRGC to replenish its missile stockpile through domestic production or foreign support, from allies like Russia or China, poses a long-term challenge, necessitating sustained Israeli operations to maintain pressure.

By targeting IRGC missile bases, Israel may reduce the threat to its territory while weakening the IRGC's ability to support proxies like Houthis in Yemen, as evidenced by the elimination of Saeed Izadi, a Quds Force commander co-ordinating with Hamas, on June 21. However, civilian casualties and damage to infrastructure, such as the strike on Kermanshah's missile base on June 16, which also hit Farabi Hospital, risk fuelling anti-Israel sentiment and strengthening the Iranian regime's domestic narrative.

Operation Rising Lion's ongoing focus on missile infrastructure, as articulated by Chief of the Israeli General Staff, Lt Gen Eyal Zamir, reflects Israel's commitment to reshaping Iran's military posture.

Key role of tankers

On June 16, the USAF deployed 32 aerial refuelling tankers - eight KC-46As and 24 KC-135R/T Stratotankers – to strategic bases across Europe and the US, laying the logistical foundation for Operation Midnight Hammer and supporting Israel's Operation Rising Lion. These tankers, operating under 'Reach' callsigns were positioned at Ramstein AB (Germany), Morón AB (Spain), Souda Bay (Greece), Aviano Air Base (Italy), Prestwick International Airport (UK), and Pease Air National Guard Base (US).

Specifically, 12 KC-135s landed at Morón, eight KC-46As at Ramstein (joining seven other KC-46As which were evacuated from Al-Udeid AB, Qatar that day), four KC-135s at Prestwick, four KC-135s at Souda Bay, two KC-135s at Aviano, and two KC-135s at Pease. This mass deployment, observed on flight tracking websites, was a critical enabler for long-range air operations, providing the fuel necessary to project US and Israeli air power across the Middle East and counter Iran's nuclear and military threats.

The tankers' initial role involved deployment of US fighter jets to forward bases in preparation for potential intervention in the Iran-Israel conflict. On June 17, a subset of these tankers refuelled 12 F-35A Lightning IIs from the 495th Fighter Squadron (FS) en route from RAF Lakenheath to Prince Sultan Air Base in Saudi Arabia.

On June 20 and 22, they supported the transit of 12 F-22A Raptors from the 94th FS from RAF Lakenheath to Muwaffaq Al-Salti Air Base (Jordan) and earlier on June 17, 12 F-16C Block 40s from the 555th FS from Aviano to Prince Sultan Air Base. This increased the number of the USAF's combat aircraft on deployment at the Air Force Central (AFCENT) Areas of Responsibility (AOR) to 84 on June 22.

These fighter aircraft deployments, described by Hegseth as an "enhancement of the defensive posture in the region", positioned advanced US combat aircraft to deter Iranian retaliation and support potential offensive operations. Unlike typical fighter "drag" missions, these tankers flew at higher altitudes and did not make standard stops in the US East Coast or Lajes Air Base, indicating a deliberate repositioning strategy to maintain operational flexibility and minimise detection.

On June 22, the tankers, in particular the eight KC-46As, played a pivotal role in enabling the 37-hour mission of seven B-2 Spirit stealth bombers that struck the three nuclear facilities. Operating outside ADS-B receiver range over the Atlantic, the tankers conducted multiple inflight refuelling to sustain the B-2s' transcontinental flight from Whiteman AFB, ensuring emissions control to preserve the mission's secrecy.

Over Iraq and Jordan, the tankers refuelled eight F-22As and eight F-35As, which provided escort, and if necessary, SEAD, for the B-2s, neutralising residual Iranian defences already weakened by Israel's Operation Rising Lion. At least 16 more F-35As and eight F-35Bs (USMC) joined the package over Iran. The KC-46As' advanced data link capabilities facilitated real-time co-ordination among the strike package, while the KC-135R/Ts ensured sustained operations. The tankers' strategic positioning at bases like Ramstein and Morón optimised refuelling logistics, enabling the US to execute the longest B-2 mission since 2001, as noted by Caine.

The IASF's Boeing KC-707 tankers contributed significantly to Israel's Operation Rising Lion, refuelling Israeli combat aircraft conducting long-range strikes over 1,500km into Iranian territory. On June 18, the IDF reported over 600 refuellings during the campaign, a portion of which involved these US tankers, particularly for IASF missions targeting nuclear sites, missile bases, and military infrastructure.

This dual support underscores the deepening US-Israel military co-ordination. The ability of the tankers to sustain both US and Israeli aircraft amplified the operational tempo of both campaigns, enabling continuous strikes on Iran's nuclear and military assets. The deployment of 32 tankers reflects the USA's commitment to providing "flexible options" for Trump, as stated by US officials to Reuters, amid escalating tensions following Iran's ballistic missile attacks on Israel.

The tankers' role, while critical to the success of both operations, thus carried diplomatic and operational challenges, necessitating careful management to maintain the US-Israel strategic alliance, while minimising the risk of Iranian retaliation.

Destruction of Weapon and Ammunition Factories

Operation Rising Lion targeted Iran's military-industrial complex, striking weapon and ammunition factories critical to its missile and drone production. On June 15, the IASF hit numerous production sites in Tehran, including facilities for navigation systems, missile engines, and air defence components. Strikes on June 18 targeted centrifuge production sites and factories in Tehran and Khojir, producing raw materials and components for ballistic missiles. By June 20, over 60 fighters struck industrial sites, including those manufacturing missile engines and anti-tank missiles for Hezbollah, significantly disrupting Iran's arms production capacity.

Over 120 munitions targeted key industrial centres on June 20, under the Iranian Ministry of Defense, including the Organization of Defensive Innovation and Research (SPND) headquarters, which supports nuclear and missile development. The IDF's issue of evacuation warnings, such as in Shiraz, reflects efforts to minimise civilian casualties, though strikes on facilities near Tehran's Gisha district, caused collateral damage. The destruction of these factories disrupts the IRGCASF's ability to replenish its missile arsenal and support proxies, a critical objective given the Islamic Regime's role in arming Hamas and Hezbollah.

Regime Change?

Operation Rising Lion included targeted strikes on Iran's security apparatus to weaken the regime's internal control and potentially facilitate regime change. On June 14, the IASF eliminated Gholam-Reza Marhabi, head of the Iranian Armed Forces Intelligence Directorate, and Mohammad Bagheri, commander of the IRGC's missile command, alongside more than 20 other security officials. Strikes on June 16 killed four senior IRGC intelligence officials, including Mohammad Kazemi, responsible for counterintelligence and suppressing dissent. The destruction of the Internal Security Headquarters and special security units in Tehran on June 20 further degraded the regime's ability to maintain order.

During the first five days of Operation Rising Lion, Israeli Boeing KC-707 tankers flew more than 600 sorties to refuel hundreds of fighter jets conducting airstrikes across Iran Babak Taghvaee

In a symbolic demonstration of its long-range strike capability, the Israeli Air Force used a Golden Horizon air-launched ballistic missile to destroy one of two remaining IRIAF KC-707 tankers at Mashhad Airport. The target was initially misidentified by regime media as a KC-747 Babak Taghvaee

Mossad's operations, including five car bomb attacks on June 15 near government and nuclear sites, targeted key figures and infrastructure, though Israel denied involvement. IDF strikes on the Iranian Cyber Police (FATA) headquarters and the state broadcaster – Islamic Republic of Iran Broadcasting (IRIB) – combined with reported cyberattacks and hacked broadcasts encouraging protests, reflect a psychological warfare component aimed at inciting domestic unrest. The elimination of Saeed Izadi, a Quds Force commander linked to Hamas, on June 21 underscores the operation's focus on disrupting Iran's terror network.

The killing of key figures like Kazemi and Marhabi risks galvanising hardline

The 3rd Khordad SAM systems were among the most numerous mobile, medium-range air defence systems fielded by the IRGC Aerospace Force. Most were destroyed by Israeli F-35Is and Hermes 900 armed MALE drones during the early days of Operation Rising Lion Ali Naderi

The USAF's 493rd Fighter Squadron (48th Fighter Wing, RAF Lakenheath) deployed 12 F-35As to Prince Sultan AB, Saudi Arabia, on June 17, 2025. Eight participated in Operation Midnight Hammer on June 22 *Babak Taghvaee*

Fifteen USAF KC-46A Pegasus tankers deployed to Ramstein AB on June 16. Ten supported Operation Midnight Hammer on June 22. This example has been scrubbed of all marks in a bid to ensure its anonymity *Babak Taghvaee*

factions, as seen in the rapid appointment of replacements like Ali Shadmani. Israel's multi-pronged approach, combining kinetic strikes, covert operations, and psychological warfare, seeks to destabilise the regime, but success depends on sustained pressure and unpredictable internal Iranian dynamics.

As Lt Gen Zamir emphasised, the campaign's success hinges on Israel's resilience and unity, with ongoing operations likely to shape the Middle East's security landscape for decades.

Enter the US

Israel's Operation Rising Lion paved the way for the US Operation Midnight Hammer on the night of June 21/22, a meticulously orchestrated 37-hour mission targeting nuclear facilities at Fordow, Natanz, and Isfahan, aimed at crippling Iran's nuclear weapons program. The operation, described by Chairman of the Joint Chiefs of Staff General Dan Caine as the largest B-2A Spirit stealth bomber deployment in US history, involved seven flying from the 509th Bomb Wing (BW) at Whiteman Air Force Base (AFB), Missouri, supported by over 200 aircraft, including F-22A Raptors, F-35A Lightning IIs, and Intelligence, Surveillance, and Reconnaissance (ISR) platforms, such as MQ-9A Reapers and potentially MQ-4C Tritons.

The operation, which saw 75 precision-guided munitions including 14 GBU-57/B Massive Ordnance Penetrators (MOPs) used and 30 BGM-109E Tomahawk Block IV Land Attack Missiles (TLAMs) launched by the USS *Georgia*, an Ohio-class submarine, leveraged deception tactics to achieve surprise. Decoy flights under callsigns MYTEE11 (three B-2s, plus one diverted) and MYTEE21 (three B-2s, one spare returned) headed west to Andersen Air Force Base, Guam, while the strike package, BATT11 (four B-2s) and BATT21 (three B-2s), flew eastbound via the Atlantic, striking Iran in co-ordination with Israel's Operation Rising Lion.

Preparation and execution demonstrated exceptional operational secrecy and strategic deception. Beginning June 16, the US deployed 32 air tankers to Ramstein, Morón, NAS Rota, and Lajes Air Bases, facilitating multiple inflight refuellings over the Atlantic outside ADS-B receiver range to maintain emissions control. On June 21, at 0953hrs US EDT, 'Aircraft Spots' reported B-2 movements from Whiteman, with MYTEE11 and MYTEE21 flights confirmed heading to Guam by 1111hrs, though MYTEE14 (B-2 serial 88-0332) diverted to Honolulu due to an emergency, and another returned as a spare. Concurrently, BATT11 and BATT21, comprising seven B-2s, transited east, undetected due to minimal communications and prior Israeli degradation of Iranian air defences.

At 0130hrs Iran time, June 22, the USS *Georgia* launched 30 BGM-109s against Isfahan's surface infrastructure. By 0210hrs, the lead B-2 dropped two GBU-57 MOPs on Fordow, followed by ten MOPs on Fordow and two on Natanz by the other B-2s, completing in-and-out strikes in 20 minutes.

On June 22, Trump claimed the strikes "completely and totally obliterated" Iran's nuclear enrichment facilities, a statement echoed by Defense Secretary Pete Hegseth, who cited months of preparation involving deception and high-level secrecy.

Initial battle damage assessments, supported by Maxar satellite imagery, revealed severe structural damage at all three sites, with Fordow showing two clusters of bomb entry points, grey-blue ash, and possible subsidence indicating underground collapse. Natanz and Isfahan exhibited significant craters and destruction, though Iran's claim of evacuating nuclear material from Fordow and Natanz suggests potential mitigation efforts.

The operation's success, driven by US-Israel co-ordination, evidenced by Israeli Prime Minister Benjamin Netanyahu's week-long advocacy to include Natanz and Isfahan, underscored a strategic alliance, with Lt Gen Eyal Zamir meeting regularly with Gen Caine and CENTCOM's Gen Michael Kurilla. However, Iran's increased oil exports and Houthi mobilisation signal potential retaliatory risks, while the movement of heavy machinery at Fordow before the strike raises questions about Iran's preparedness, complicating the assessment of the operation's long-term impact on Iran's nuclear capabilities.

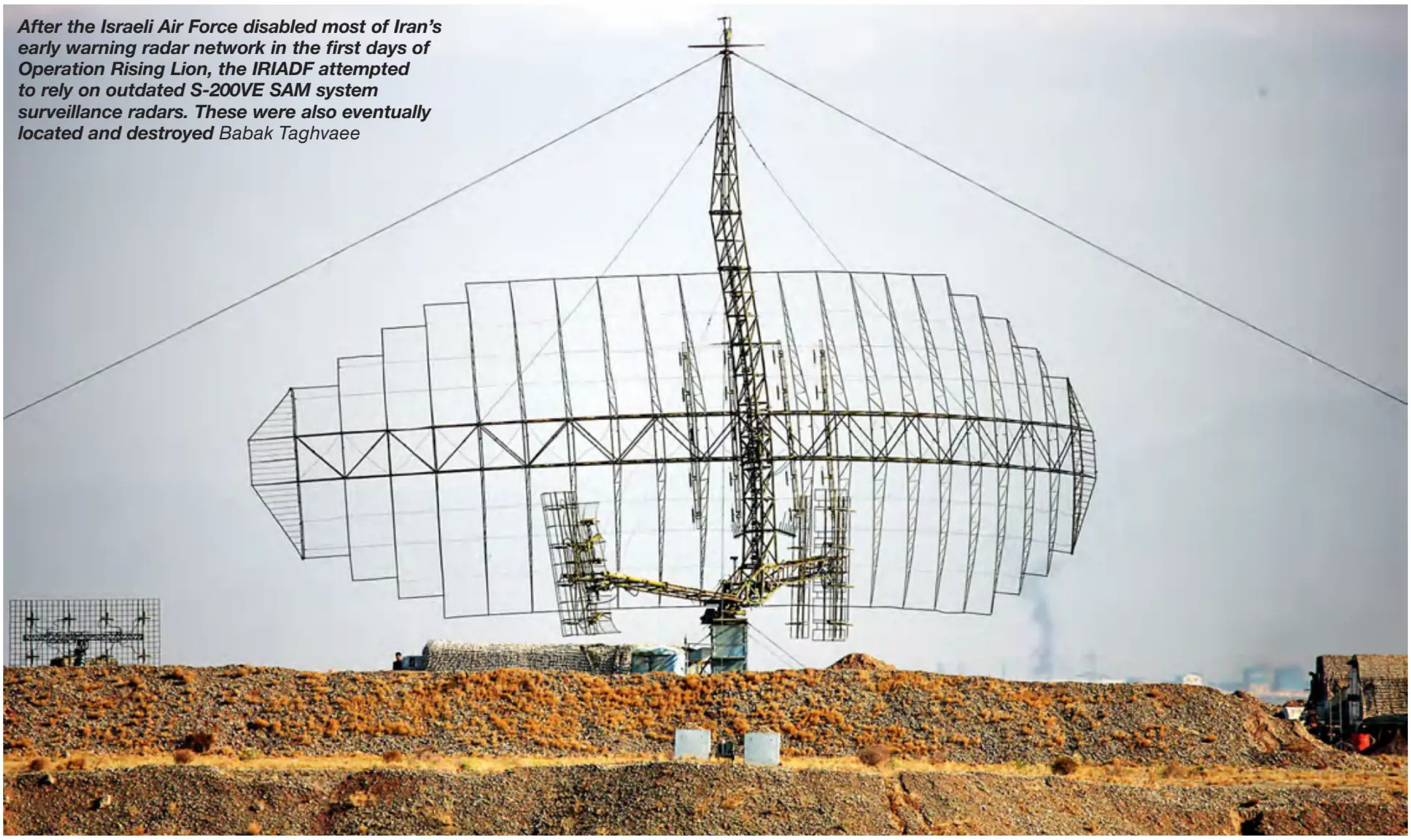
One of the 12 F-22A Raptors from the USAF's 94th Fighter Squadron deployed to the CENTCOM AOR on June 20 and 22. Eight participated in Operation Midnight Hammer. This Raptor was photographed arriving at RAF Lakenheath on June 18 *Dino Carrara*

US fighters deployed to Middle East

Operator	Aircraft Type	Squadron	Wing	Home Base	Base during the Operation	Start of the Deployment	Serial Numbers/ Codes
USANG	A-10C+ Thunderbolt II (x 12)	190th FS	124th FW	Gowen Field Air National Guard Base	Al-Dhafra AB	March 2025	Only 78-0643, 78-0707, 79-0091, 80-0218, 80-0276 are known
USAF	F-15E Strike Eagle (x 12)	492nd FS	48th FW	RAF Lakenheath	Muwaffaq Salti AB	November 7, 2024	91-0301, 91-0302, 91-0315, 91-0316, 91-0331, 96-0202, 97-0218, 97-0219, 97-0220, 97-0221, 97-0222, 98-0134
USAF	F-16C Fighting Falcon (x 12)	480th FS	52nd FW	Spangdahlem AB	Prince Sultan AB	October 25, 2024	90-0813, 90-0829, 91-0338, 91-0342, 91-0343, 91-0352, 91-0403, 91-0412, 91-0417, 92-3918, 93-0080, 96-0083
USAF	F-16C Fighting Falcon (x 12)	555th FS	31st FW	Aviano AB	Prince Sultan AB	June 17, 2025	87-0351, 87-0359, 88-0425, 88-0460, 88-0506, 88-0532, 88-0535, 89-2016, 89-2024, 89-2068, 89-2026, 90-0773
USAF	F-22A Raptor (x 12)	94th FS	1st FW	Joint Base Langley–Eustis	Muwaffaq Salti AB	June 20-22, 2025	05-4097, 08-4154, 08-4164, 08-4168, 08-4169, 09-4173, 09-4177, 09-4181, 09-4184, 09-4187, 09-4191, 10-4194
USAF	F-35A Lightning II (x 12)	34th FS	388th FW	Hill AFB	Prince Sultan AB	March 24, 2025	17-5237, 17-5258, 17-5259, 17-5262, 17-5263, 17-5266, 17-5282, 19-5488, 20-5568, 20-5611, 20-5610, 22-5686
USAF	F-35A Lightning II (x 12)	493rd FS	48th FW	RAF Lakenheath	Prince Sultan AB	June 17, 2025	19-5493, 19-5497, 20-5576, 20-5587, 20-5596, 20-5599, 20-5614, 20-5616, 20-5617, 22-5682, 22-5684, 22-5685
USMC	F-35B Lightning II (x 10)	VMFA-542	MAG-14	Marine Corps Air Station Cherry Point	Prince Sultan AB	May 2025	169626/WH-14, 170064/WH-01, 170065/WH-02, 170066/WH-03, 170068/WH-05, 170069/WH-06, 170070/WH-07, 17007/WH-08, 170072/WH-09, 170073/WH-10

Prior to Operation Midnight Hammer, the Iranian Atomic Energy Organization (IAEO) successfully evacuated Iran's stockpile of already-enriched nuclear material (60% enriched uranium) from Fordow and stored it in an underground site in Isfahan. After the operation, Netanyahu claimed that he was aware of the whereabouts of the stockpile which was said to be enough for the Iranians to build multiple tactical nuclear warheads for the Iranian ballistic missiles.

Despite the USAF eliminating the underground uranium enrichment facilities at Fordow and Natanz, the IASF continued its Operation Rising Lion aimed at destroying all the infrastructures on Iran's domestic ballistic missile production sites. They included underground Shahid Hemmat and Bakeri industrial Groups at Khojir, Parchin and Lavizan. On June 22, the IASF also conducted airstrikes at a ballistic missile base of the IRGCASF at Yazd and continued its airstrikes at other ballistic missile bases of the IRGCASF in Tabriz. **afm**



After the Israeli Air Force disabled most of Iran's early warning radar network in the first days of Operation Rising Lion, the IRIADF attempted to rely on outdated S-200VE SAM system surveillance radars. These were also eventually located and destroyed *Babak Taghvaee*

BUILDING UKRAINE'S Viper Force

The Netherlands completed the donation of 24 F-16AMs to the Ukrainian Air Force on May 27. The aircraft are part of a significant multinational effort that should lead to a Western-style fourth-generation, as **Gert Kromhout** explains

The multinational F-16 effort is bundled into the Air Force Capability Coalition (AFCC). This is a steering group led by the Netherlands, Denmark, and the United States, focusing on supporting the Ukrainian Air Force. Fourteen countries are affiliated with this coalition. Major General Arnoud 'Ditch' Stallmann, commander of the AFCC and director of the program management Ukraine (PD-OEK) explains: "The goal is not only to supply the aircraft, but everything that is involved in deploying them effectively. This also involves knowledge of the use of air power, maintenance, spare parts, and training. We co-ordinate this within the coalition. Other countries organise training courses, for example, donate budget or armament."

The program management co-ordinates and directs all defence initiatives in support of Ukraine.

Training centre

Since the Russian invasion, the Netherlands has been at the forefront of support for Ukraine. Even before the establishment of the AFCC, the Royal Netherlands Air Force had started establishing the European F-16 Training Center (EFTC) for training pilots for Ukraine and Romania. The EFTC is located at Fetesti air base in Romania and is financed by the AFCC.

"To bring that F-16 capacity to Ukraine and develop the Ukrainian air force into an effective fourth-generation force, F-16 pilots must be trained, among other things," Stallmann explains. "In the beginning, these were pilots who had flown Soviet types and were retrained for the F-16. In the meantime, young people who have left school and are not yet pilots have also entered the pipeline. This training includes instruction in English, a basic medical examination, basic flight training, and all other aspects that prospective pilots typically undergo. They receive this in their own country or at one of the AFCC partners. The EFTC is one of the flight factories where they learn to fly the F-16."

Romania hosts the EFTC, while Lockheed Martin operates the training centre. The American defence giant has hired various companies, such as Daedalus for maintenance and Airbus and Draken for pilot training. The aircraft and much of the equipment are currently still officially owned by the Netherlands.

Performance-based

According to Stallmann, the Netherlands has provided just the aircraft, equipment, and expertise necessary to keep the aviation company running. "It is up to the contractor to fill in the flight instructors and other personnel with subcontractors. There are no active Dutch Air Force pilots or other personnel employed, though there are former KLu pilots involved." The Netherlands is collaborating with Romania. "They are providing the airport, housing, food, and other things. In return, they receive several training slots for their pilots," he continues. "The contract we have with

The EFTC has seven F-16BMs and 11 F-16AMs in the inventory. All are former Dutch aircraft
Mediacentrum Defensie, Sgt Christian Schrik

F-16BM J-882 departs Fetesti. After the transfer to the Romanian Air Force, all 18 jets will get Romanian serials and roundels
Mediacentrum Defensie, Sgt Jasper Verolme

Lockheed Martin is performance-based. The training centre must deliver the agreed flight hours per year. I am mainly concerned with how many people are trained for Ukraine each year."

Keeping the old F-16s operational requires a great deal of effort. Stallmann believes the production of flight hours is going quite well. "When we still had the F-16 at full capacity, it was difficult to get that old beast flying. However, with a shrinking fleet, it becomes easier to maintain the active part of the fleet. There are several critical components that we have had problems with in the past, but with the extensive experience we have now, there are not many significant issues with them. They can fly the hours that are needed."

Sacrifices

The changed destination of the 18 and 24 aircraft for the EFTC and Ukraine has had a significant impact on the air force and the Command Materiel and IT (COMMIT). At the time the Ukraine story started, the end of the F-16 with the Royal Netherlands Air Force was already in sight. The dismantling of the organisation around the old fighter aircraft had begun. COMMIT's Project Team for the Disposal of Aviation Systems had been busy with it for years. Now, the EFTC and later the deliveries to Ukraine became the focus. The aircraft, along with the entire maintenance organisation surrounding it, are no longer being disposed of, but are being maintained. "That is a completely different task than taking them apart and selling usable parts," says Stallmann. "They put a lot of effort into that."

The air force, and in particular the Air Combat Command (ACC), also had to make sacrifices. "A special team from the air force is mentoring the EFTC, while the air force procurement organisation is working hard to conclude contracts with the contractors. Several staff members remained in their old jobs, despite their transition to the F-35. On the other hand, we were quite lucky with the timing, as far as you can call it lucky in these kinds of conflicts. Because we had not yet fully phased out the F-16 capacity, we were able to prepare the F-16s for training in Romania and later for the donation to Ukraine."

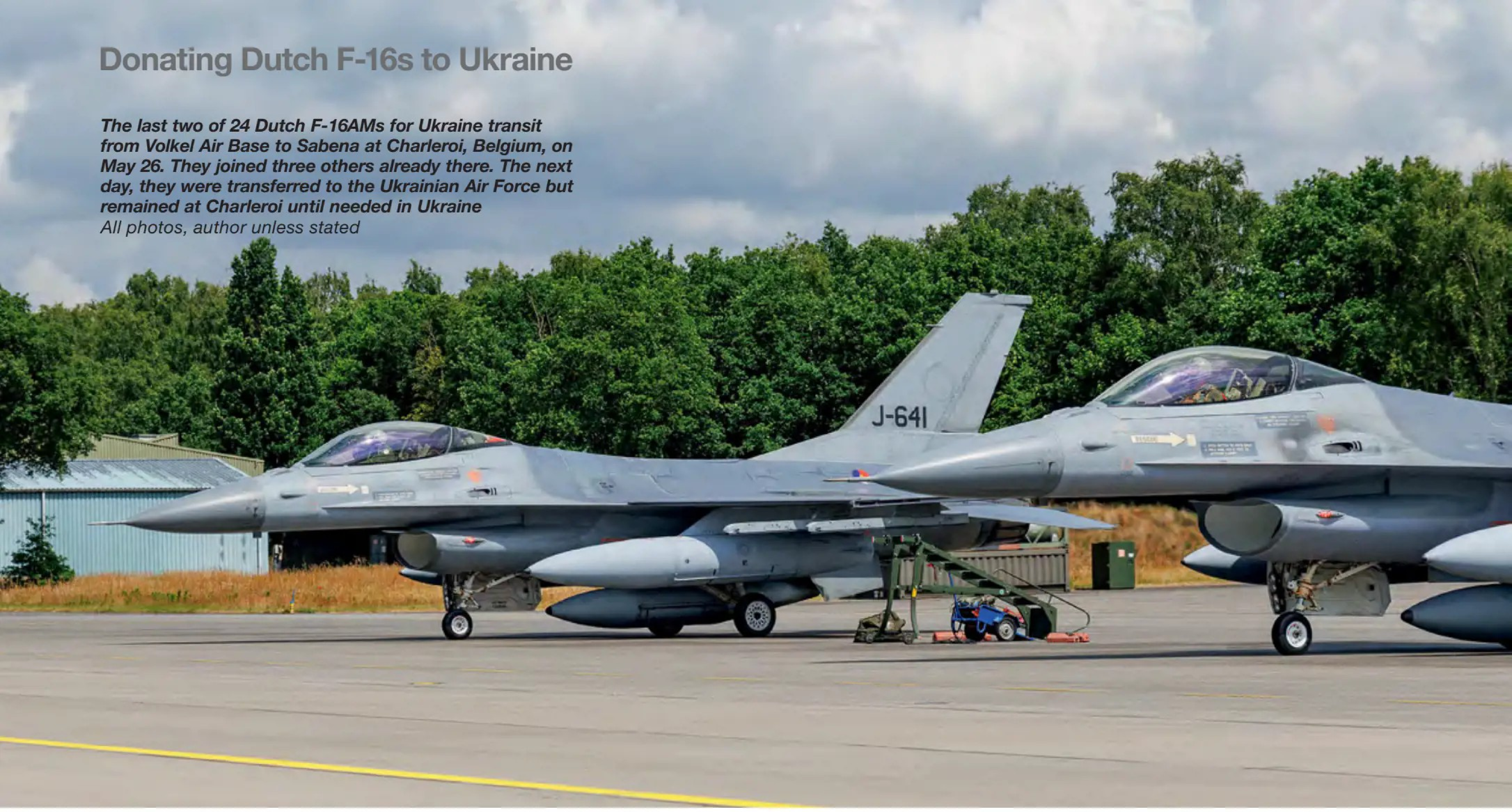
Approval

The RNLAF and COMMIT, together with the parties involved, have set up a Continuous Airworthiness Management Organisation (CAMO) in Romania. In a CAMO, you arrange the complete maintenance of aircraft to ensure their airworthiness. Typically, establishing such an organization takes a few years. The EFTC managed it in just over six months.

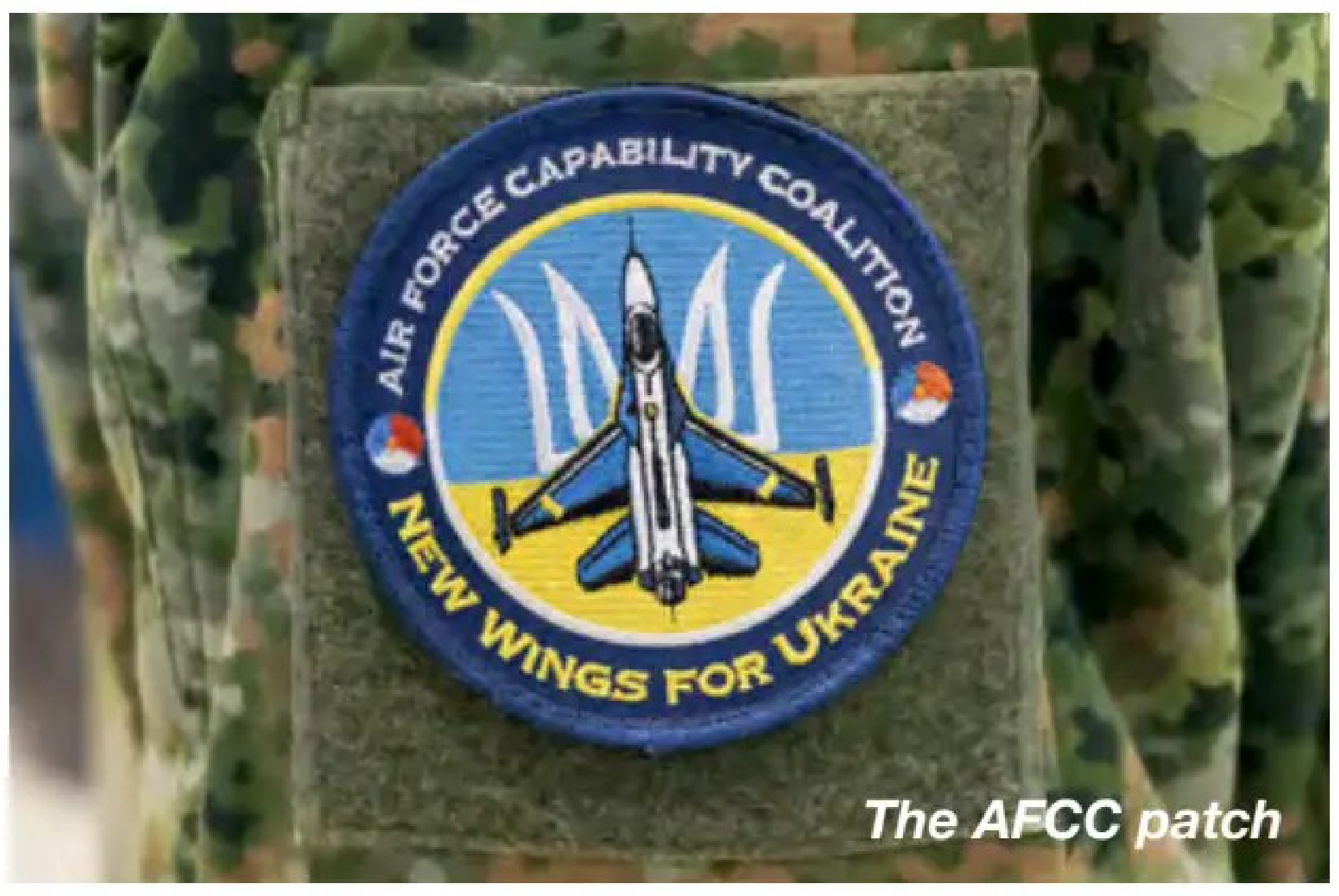
The training centre for pilots had to arrange all kinds of new contracts, but it takes two years to receive the equipment or the knowledge. The Netherlands has tried to fill those gaps as much as possible. A good example is the maintenance of aircraft engines. An operator can choose to do it themselves or to outsource it. In the first case, it had to set up his organization. That means purchasing and acquiring tools, equipment, personnel, knowledge, expertise, and certification. In the second option, he must conclude contracts and negotiate terms. One way or another, setting it up requires a significant amount of time. Lockheed Martin opted for outsourcing and sought a partner that could handle it. In the meantime, the Netherlands has supplied several spare engines that fill that gap. There are parts in crates that must be replaced after a specific period because they are no longer safe. If they had signed a contract for replacements but the supplier could not yet supply them, the air force looked to see if it could provide these items or arrange for an extension of the shelf life. They have also sent a technical team several times for repairs and advice.

Conditions

Officially, the Netherlands has committed to ownership of the EFTC jets until December



The last two of 24 Dutch F-16AMs for Ukraine transit from Volkel Air Base to Sabena at Charleroi, Belgium, on May 26. They joined three others already there. The next day, they were transferred to the Ukrainian Air Force but remained at Charleroi until needed in Ukraine
All photos, author unless stated

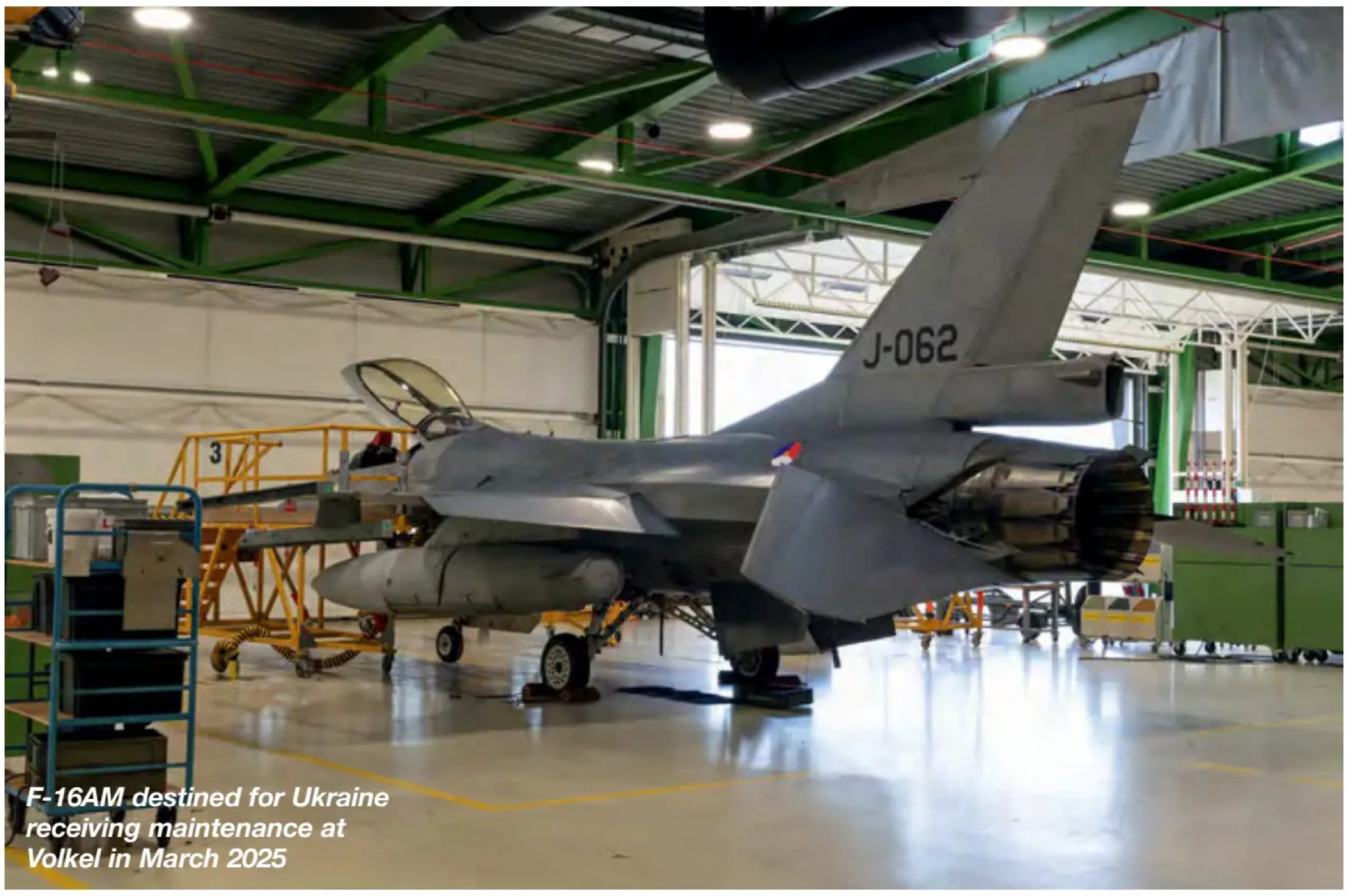


The AFCC patch

31, 2025. The intention is to transfer the aircraft to the Romanian Air Force before that date. Preparations for this are in full swing. The Romanians will not simply receive the aircraft; there are conditions and obligations attached to the transfer. The Netherlands does not want the Romanian Air Force to stop the training centre and use the aircraft exclusively for its own use. Agreements are being put in place on this. According to Stallmann, two contracts are being concluded: “We are negotiating under which conditions the F-16s will be transferred to Romanian ownership. We must receive training for Ukrainian pilots in return for the aircraft, as is currently the case.”

The other contract is between Romania and Lockheed Martin. “Once both are completed, we will, in principle, no longer be involved, except for the financing of the project. That is more a matter for the AFCC, as we are all working together. Of course, we will continue to provide advice.”

Before that happens, the Americans must still indicate in which configuration the aircraft may be transferred because they are the intellectual owners. It may be necessary to transfer capabilities in or out. Stallmann did not wish to elaborate further on the configuration, stating that when it is the case, it is the Netherlands’ responsibility to implement it. Now that the last aircraft has left, COMMIT is looking at what they still have on the shelves in terms of spare parts and other items specifically related to the F-16. “We are making an inventory of what



F-16AM destined for Ukraine receiving maintenance at Volkel in March 2025

F-16AM at Volkel in March 2025. Two weeks later, it was flying for Ukraine

The engine inlets (internal white parts) of almost all F-16s for Ukraine were overhauled before delivery

Major General Arnoud Stallmann meets Ukrainian Minister of Defence Rustem Umerov at Volkel earlier this year
Mediacentrum Defensie, Barend Westerveld

Romania can still use and what Ukraine needs. The team will be busy getting that equipment there in a functioning and certified condition. Of course, it represents value, so we need a budget to write it off."

Ukraine

The Ukrainian Air Force faces the enormous challenge of reaching a high Western level. It must transition from a Soviet culture with a different language to a very different Western way of doing things, where English is the language. "In our culture, we can make decisions at a lower level, for example, by a pilot in the air or a maintainer on the ground," Stallmann explains. "In Soviet culture, it is much more centralised and hierarchical. People do things, but mainly on orders. Our people have much more freedom of thought and action. We say, this is the intention, make sure it works. That is a completely different way of thinking. It takes time to get that into Ukrainian culture."

The organisation that the Ukrainian Air Force is now building with the help of the AFCC and goes much further than just a CAMO at Fetesti. Stallmann continues. "It is about training, infrastructure, maintenance, and logistics. You need that entire package. The biggest challenge for Ukraine and us as AFCC is to bring all those flows together. They are paying close attention to it and are taking significant steps. The AFCC does what it can, and all countries contribute to that. Flight training, for example, does not only take place at Fetesti, but also elsewhere. The Royal Netherlands Air Force has already provided various training courses in the Netherlands, such as in life support, picking up the drag-chutes, fire brigade, aircraft preparation, and anti-G training."

Minister of Defence Ruben Brekelmans (centre) after his F-16 orientation flight from Fetesti. On his right is Major General Stallmann, on his left a Dutch EFTC contracted flight instructor
Mediacentrum Defensie, Sgt Jasper Verolme

The departure of the last F-16s from Volkel also marked the final F-16 flight for 60-year-old Major Herman den Besten (photo) as well as Major General Stallmann

F-16AM J-010 departs Charleroi for Fetesti on November 7, 2023

Air intakes

On May 7, Defence Minister Ruben Brekelmans announced that the Netherlands would establish the Ukraine Maintenance Training Center (UMTC) at Fetesti, in collaboration with Romania. This initiative also came from the AFCC. "That centre is necessary, because repairing and maintaining Western aircraft is very different from Soviet aircraft," Stallmann explains. "The set-up is the same as at the EFTC, so again with a contractor. We have made equipment available, such as weapon loader trainers and non-flyable F-16s. The trainees are trained to become certified maintainers and then do on-the-job training at the EFTC. That way, you get synergy."

According to the director, the aircraft that are now in Ukraine were delivered in a pretty good technical condition. "The engine air intakes have nearly all been overhauled, because they were no longer in good condition."

This does not alter the fact that they must undergo periodic phase inspections; for the time being, this will take place outside Ukraine. "The AFCC ensures that this is possible. Ukraine must maintain and operate the F-16s by Western standards, ensuring the system remains certified. We want to prevent them from being banned from flying over Europe because we do not trust their maintenance organisation. That is why we are also bringing their certification bodies up to Western standards."

In closing, Stallmann emphasises that a great deal is happening within the AFCC and that the Netherlands plays a significant role in the entire enterprise. "We supply the aircraft, are strongly involved in the EFTC and the maintenance centre and provide support in all kinds of forms. All those people from the air force and the committee can be proud of what we have all done and achieved in the past few years." **afm**

The oldest operational Dutch F-16 J-641, delivered in 1983, departs Volkel for the last time, marking the end of F-16 ops in The Netherlands

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When the going gets tough...

Mina Adel delves into the previous experiences of both the Pakistan and Indian air forces that may have aided them during their spat in May

The Chengdu J-10C was undoubtedly a mystery to the Indian Air Force until the night of May 6/7. They certainly know the PAF's capabilities now Awais Lali

Air battles between the Indian and Pakistani air forces have always been described as among the fiercest in history, not only in terms of intensity and the number of aircraft involved but also due to the daring and bravery of pilots on both sides. Due to these clashes, the names of pilots such as Muhammad Mahmood (MM) Alam and Nirmal Jit Singh Sekhon became legendary.

On May 7, many of us took a keen interest in one of the most significant and intense air battles in modern history. What made this confrontation particularly noteworthy was that it involved two evenly matched adversaries, each equipped with a mix of Western and Eastern military systems. As usual, the battle sparked widespread debate in the media, leading to the circulation of misinformation that initially obscured the facts.

This prompted *Air Forces Monthly*, renowned for its commitment to providing unique and impartial coverage for its readers, to engage with an elite group of experts and former pilots to analyse the battle and extract valuable lessons for future aerial conflicts. Among them were Osman Basibuyuk, a Turkish F-16C instructor and air combat specialist; Pierre-Henri Chuet, a French Navy Rafale pilot; and Mikael Grev, a Swedish Gripen pilot.

Sweeping Indian storm

On May 6, India issued a notification to the International Civil Aviation Organization (ICAO) regarding a large-scale aerial manoeuvre along the southern part of its border with Pakistan, scheduled to take place between May 7 and May 8, 2025. On the same day, Indian P-8I aircraft were flying over the Arabian Sea. These aircraft possess advanced intelligence-gathering and communication capabilities, allowing them to monitor hostile communications and identify potential threats, particularly air defence systems. In addition to their primary role in maritime surveillance, they also play a crucial role in monitoring Pakistani naval exercises in the region.

At dawn on May 7, the Indian military launched a counterterrorism operation named Operation Sindoor. The term Sindoor is a red cosmetic powder worn by married women. It is a symbol of marital status, and its absence often signifies widowhood, thus symbolising the loss of husbands in the recent terrorist attack. According to India's official statement, fighter jets took off from multiple air bases to conduct precision strikes on nine sites along the Pakistani border believed to be linked to terrorist groups, without targeting any Pakistani military installations.

The Indian military released footage confirming the successful precision strikes on targets using cruise missiles such as SCALP, AASM guided munitions, Harop kamikaze drones, and even quadcopters. However, local sources reported that the attacks resulted in 26 civilian deaths and 46 injuries, and that Pakistan's air defences failed to deter or stop the assault.

Then the Indian Air Force expanded its aerial campaign, making Pakistani air bases primary targets. Eleven PAF air bases were attacked, with footage confirming strikes on facilities such as Rafiqui, Nur Khan (formerly Chaklala), Rahim Yar, Sukkur (Bholari), Chunian, Mushaf (Sargodha) and Shahbaz (Jacobabad), along with three key air defence radar sites in Basrur, Sukkur and Arif Wala.

These specific airbases were selected due to their strategic importance, as they house Pakistan Air Force command and control centres, and their tactical significance, which includes hosting elite squadrons with strike-capable fighter jets. However, despite the strikes, India's missile attacks lacked the necessary intensity to cripple aerial operations, causing only minor damage to runways and hangars, which were easily repairable during air operations. The primary objective appeared to be the delivery of a strategic political message rather than inflicting catastrophic damage.

Chuet examined the photos of the strikes and shared some interesting observations: "The Indians have demonstrated their ability to carry out precise strikes and inflict damage. In the military, we generally favour the concentration of forces, meaning that firepower is typically focused on a specific target. However, in this case, the Indians, likely for political messaging and marketing reasons, opted for a more dispersed approach, striking multiple locations but with relatively limited impact at each site.

"There are two possible explanations: either this was a deliberate decision to avoid escalation, which aligns with their official narrative, or many of their missiles were intercepted. Nevertheless, when we analyse the precision of the strikes and the absence of widespread collateral damage, unlike situations in Ukraine, where strikes often leave noticeable marks on surrounding areas, it becomes evident that the Indians possess the capability to conduct pre-planned, highly accurate attacks in Pakistan. This challenges Pakistani claims regarding their ability to degrade the precision of Indian missiles, especially given the fact that Indian forces successfully struck key structures in a manner consistent with Western military operations.

He concluded: "Once again, we should be cautious when hearing assertions that the Indians are incompetent or lack precision. These strikes demonstrate that they can target Pakistani military bases with remarkable accuracy. As a former ground attack pilot, I recognise a well-executed mission when I see one. In this case, the Indians effectively carried out their air-to-ground targeting operations."

PAF professionalism in air combat

The Pakistani military announced the launch of Operation Bunyan al-Marsous to counter the Indian forces, which they claimed had struck fictitious terrorist targets, as described by the Pakistani Prime Minister. Pakistan later officially declared that it had shot down five Indian fighter jets in a fierce aerial battle, including three Rafale jets, a Su-30, and a MiG-29, with no official response from the Indian side.

In a press conference, the spokesperson for the Pakistan Air Force provided a detailed explanation of the aerial battle between the Indian and Pakistani air forces, describing it as one of the most intense air battles in modern history. A total of 72 Indian fighter jets engaged with 42 Pakistani fighter jets. The Indian formations concentrated their forces for an attack from four principal axes, prompting the Pakistani side to call in additional fighter jets to reinforce the formations already engaged in the aerial battle.

The PAF claims of downing three Indian Air Force Rafales, has not done the French jet any good. Undoubtedly both Thales who supplied the SPECTRA electronic warfare system and Dassault the aircraft manufacturers will be carrying out their own investigations as to why it happened *Sanjay Simha*

"The PL-15 missile's radar is probably activated 15-30 seconds before impact."

The Pakistani strategy focused on identifying the types of Indian aircraft using their signals, confirming the presence of 14 French-made Rafale jets. Immediately, orders were issued for pilots to prioritise the destruction of the Rafale jets to weaken the Indian formations.

The Pakistani formations took two minutes to adjust the rules of engagement and 20 minutes to deploy 42 aircraft into the air. It is estimated that the number of fighter jets has reached 40, comprising three models: the F-16 MLU, JF-17C Block-3 and the J-10CE. These were divided into ten Finger 4 formations, a standard tactic for Pakistani fighter jets based on American combat doctrine.

The Pakistanis had multiple opportunities to study and engage the Rafale aircraft in various training exercises. Their experience began with training alongside naval Rafale jets on the French aircraft carrier in 2012, followed by exercises with Qatari Rafale jets during Anatolian Eagle 2021 in Turkey. Additionally, they participated in Spears of Victory drills in 2024 and 2025, where they trained with both French and Qatari Rafale jets.

Finally, the Pakistanis engaged in combat exercises against Qatari Typhoon jets during Zelzal–2024. While these experiences do not diminish the capabilities of the French Rafale, its opponent has thoroughly developed effective counter-tactics, which have given it an advantage, as the Pakistani Air Force spokesperson emphasised in a statement.

On the other hand, the Indian Air Force also participates annually in exercises against similar or more advanced aircraft of the Pakistan Air Force. Notably, in Pitch-Black exercises in Australia, Cope India against the US Air Force, Garuda with the French Air Force, Cobra Warrior with the Royal Air Force, and even Red Flag drills in the United States. However, it has never participated in any exercises against Chinese jets, particularly the J-10C.

Basibuyuk stated: "As someone who has previously participated in exercises with Pakistani pilots and flown with exchange pilots sent to Turkey, I can easily say the training level of Pakistani pilots is high."

He added: "The Pakistan Air Force has been participating in the Anatolian Eagle exercises held in Turkey for many years

The Pakistan Air Force regularly send their F-16C/Ds and JF-17 Thunders to Exercise Anatolian Eagle at Konya, where the aircrews would undoubtedly pick up valuable tactical tips *Alan Warnes*

An Indian Air Force Su-30MKI from Bareilly Air Force Station comes into land at Tanagra air base in Greece after an Exercise Iniochos sortie in April. Turkey works with Pakistan, Greece entertains India; all four air forces align with their enemy's enemy *Alan Warnes*

Many believe that Qatar worked with Pakistan to help unlock the tactical strengths of the Dassault Rafale may have while exercising together *Kevin Wills*

> ***"If the operating frequencies of the threat are not in the library, it is not possible to prevent or deceive such threats."***

[since 2004]. These exercises have the same characteristics as the Red Flag exercises conducted in the US.

"In the Anatolian Eagle training area, air warfare can be exercised in conditions closest to reality. Such exercises, which simulate real warfare, provide pilots with great experience. We know that the Pakistan Air Force has also participated in Red Flag exercises in the US. Therefore, the pilots had practiced air combat similar to the one that took place on May 7 many times in their training, so they did not encounter any surprises. This was their biggest advantage. As for Indian pilots, they don't have so much experience in international exercises and training."

Basibuyuk added: "One of the most critical factors that determines the winner of a war is the technology of the weapons used. Previously, the main striking force of the Pakistan Air Force was the F-16. Pakistan added new F-16 Block 52+ aircraft to its fleet in 2005. However, they are not used in intercept missions. The radars of the F-16s in the PAF are old technology now (AN/APG-68 radar). The emergence of AESA has revolutionised fire control radars."

After Pakistan received J-10Cs with AESA radars from China, it must have tested them against their F-16s. The J-10Cs would have gained superiority over western-made F-16s and their weapons, so that the PAF began using J-10Cs as interceptor aircraft. This preference indicates the J-10C aircraft possesses significant capabilities.

Indian mistakes or forced to act?

The Indians did not initially target PAF aircraft, defence systems, or radars at the start of the battle, as they believed this might lead to a direct aerial engagement. However, this assumption was wrong, considering the Balakot 2019 conflict, when the PAF responded to Indian attacks not aimed at the Pakistan military.

So I asked experts for their assessment of both sides and to clarify the tactics used in such combat scenarios: Chuet explained: "We have a border, and on the other side of it Pakistani fighters were present. On the Indian side, they probably sent fighters known as 'sweeps'. The role of sweeps is not to engage in direct combat but rather to ensure that enemy fighters retreat, preventing them from penetrating or interfering with the firing points of the strikers. One key aspect to analyse in the coming weeks is which aircraft were assigned to air-to-air roles, and which were tasked with air-to-ground operations. Did the Indian forces separate these roles, or did they assume that the Rafale, being their best aircraft, would initially perform air-to-ground operations before switching to an air-to-air role? If this transition occurred, it would have burdened the Rafale, making it vulnerable against specialised enemy aircraft designed for air-to-air combat.

He added: "Another surprising aspect is the altitude at which the strikers operated. Typically, we would expect them to arrive at low altitudes, then go up to fire their SCALP missiles or BrahMos missiles before ascending. After firing, they would then descend to avoid enemy counterattacks. Understanding whether the aircraft that were hit were strikers or sweepers is crucial because it offers insight into India's combat strategy. If strikers were hit, it would suggest a serious tactical planning error, specifically concerning the 'low high low' decisions on approaching firing points.

"However, currently, there is no definitive proof that strikers were affected. If, on the other hand, sweepers or aircraft assigned to swing roles were hit, it becomes vital to analyse the timing of their downing because their briefing likely focused on launching the attack, returning safely, and concluding operations.

"However, Pakistani forces responded with massive force – reportedly deploying over 42 fighters into the air. At that point, an in-flight decision might have been made to change the mission objective. Combat pilots are aware that altering mission plans mid-flight is risky. If the initial plan was to strike and retreat, but then the general staff suddenly instructed pilots to defend the border against PAF aircraft, this represented a significant shift in strategy. The air combat that ensued was no longer just about protecting strike aircraft but turned into a battle for securing Indian airspace."

Pakistani effective tactics

What was different from the 2019 battle, was that Pakistan's response came swiftly within the same fight, without a prolonged delay. This could indicate the Pakistani side was well-prepared, both in terms of intelligence and training, allowing them to execute their mission directly and engage without hesitation.

We can assume that the primary focus of the Indian aircraft was on monitoring the F-16s. However, considering the scattered locations where aircraft were shot down according to the PAF claims, it becomes evident that the PAF successfully manoeuvred the J-10s and integrated them into mixed formations.

Basibuyuk explained: "If we put aside the manoeuvrability of the aircraft, we can say that an interceptor aircraft must have three basic advantages to gain an advantage over an enemy aircraft. One: it must see the enemy first; two: it must be able to fire at the enemy first, and thirdly it must have an increased ability to protect itself with an electronic warfare system. Pakistan effectively utilised its data link (Link-17)

The two-man Su-30MKI Flanker is undoubtedly a formidable enemy, and has many operational strengths like the huge BrahMos supersonic cruise missile. Still, the Pakistan Air Force claims to have shot one down in May and back in 2019 during the Balakot operation *Alan Warnes*

JF-17C Thunder Block 3s with their Chinese KLJ-7A AESA radar, vast array of missiles including the Chinese PL-15, bombs, and Aselpod target pod with an air-to-air refuelling system, make the jet a very different beast from the Block 1/2s. The JF-17Cs have been exhibited at Dubai 2023, Saudi 2024 and Bahrain 2024 airshows in recent years *Alan Warnes*

capability during this conflict, which is crucial for transferring the air picture to interceptors.

"Here's a simple explanation of how air engagement takes place. AWACS (in this case the Erieye system) detects the Rafale aircraft and sends target information to the J-10C via data link. J-10C fires the PL-15 missile according to the information received from AWACS. Still, it does not lock on the target with its radar. Thus, the Rafale aircraft is not aware an enemy aircraft has locked onto it. Data link is maintained between the missile in the air and the firing aircraft, so the current target position is constantly updated to the rocket. The missile continues to approach the target. At this time, the missile's radar is still inactive.

"Since the J-10C aircraft does not have a radar lock on the Rafale, and the rocket coming does not have a lock on the target, the Rafale is still unaware of the enemy engaging it."

Basibuyuk added: "The PL-15 missile is an active radar-guided missile. The missile's radar is probably activated 15 to 30 seconds before impact. Since reaction time is very short, the distance is very close, and the PL-15's radar is AESA-based, jamming will not be effective at that position. In this case, Rafale can't survive.

"The attack on the Rafale with this tactic was a complete surprise and achieved a very significant success. Additionally, the self-protection system on the Rafale, known as Spectra, did not function effectively. This could be due to two reasons. Either the system's capability is not good, or the threat library does not contain information about the J-10C aircraft and the PL-15 missile. If the operating frequencies of the threat are not in the library, it is not possible to prevent or deceive such threats."

Important lessons

This battle highlighted the importance of electronic support aircraft, particularly early warning aircraft and specialist electronic warfare aircraft, as well as the tactical advantages they can provide to fighter formations.

Grev explained: "In BVR [Beyond Visual Range] combat, much of the battle revolves around situational awareness [SA]. A robust sensor, like the one on the Saab 2000 Erieye AEW&C, is a vital asset in BVR combat. It can fly at a safe distance, detect all enemies with its powerful radar, and send this information to fighter aircraft on combat air patrol (CAP) at the front, thus eliminating the need for them to use their radar for SA.

He added: "An AEW&C enhances the 'observe' phase in the crucial OODA loop (Observe, Orient, Decide, Act). What further strengthens the 'Orient' phase is the availability of decision support.

"By consolidating information in one place, advanced AI systems can process sensor data and present it to the operator in a way that maximises their understanding of the actual threat.

Another lesson learned from this battle is the benefits of long-range missiles, such as the PL-15, and the features that make them a significant threat to NATO aircraft in the future. This is due to the ability of Chinese aircraft to carry a large number of these missiles at a lower manufacturing cost.

Basibuyuk stated: "After this conflict, the Chinese released videos of the factory where the PL-15E missiles were produced. The missiles were produced by robotics technology without human intervention. With these images, China gave the world the message that it could produce a large number of missiles in a very short time. Air-to-air missiles are costly weapons, and China's mass production will ensure that the price of these weapons is significantly lower."

He concluded: "In the past, Western companies and Russian companies were in competition in the market, but I think the Chinese will replace the Russians in the coming years."

Chuet said: "I was an officer in the tactical unit when I was on Super Étendard, and in 2013, I took the initiative to write a summary on air-to-air missiles. I enjoyed researching all the available information from open sources about the air-to-air missiles in existence. That is how I discovered the PL missile family. It has only been a few years since Western armies finally acknowledged their capabilities. Today, most nations around the world use these well-known Fox 3 missiles, which operate on a fire-and-forget principle, and they train almost daily to counter this type of threat."

He added: "It seems the Chinese have automated their missile manufacturing, which would allow them, in the event of combat, to supply their numerous aircraft with missiles rapidly. This process can be highly efficient – if a fighter jet is equipped with six or eight air-to-air missiles, compared to the two Meteor missiles on the Rafale, the ability to replenish them quickly becomes crucial.

"However, for this strategy to be effective, the defence industry must be capable of sustaining high production rates.

He concluded: "I am eager to see whether Pakistan will announce orders for stealth aircraft in the coming months or years. Additionally, it will be interesting to observe whether China secures international orders for the J-10C compared to the successful Rafale. **afm**

The Dassault Rafale is undoubtedly a very capable 4.5 generation fighter in the right hands. Particularly when armed with the Meteor BVRAAM *Sanjay Simha*

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ICELAND BOUND

The Czech Air Force recently took on NATO's Iceland Air Patrol, as **Alan Warnes** reports

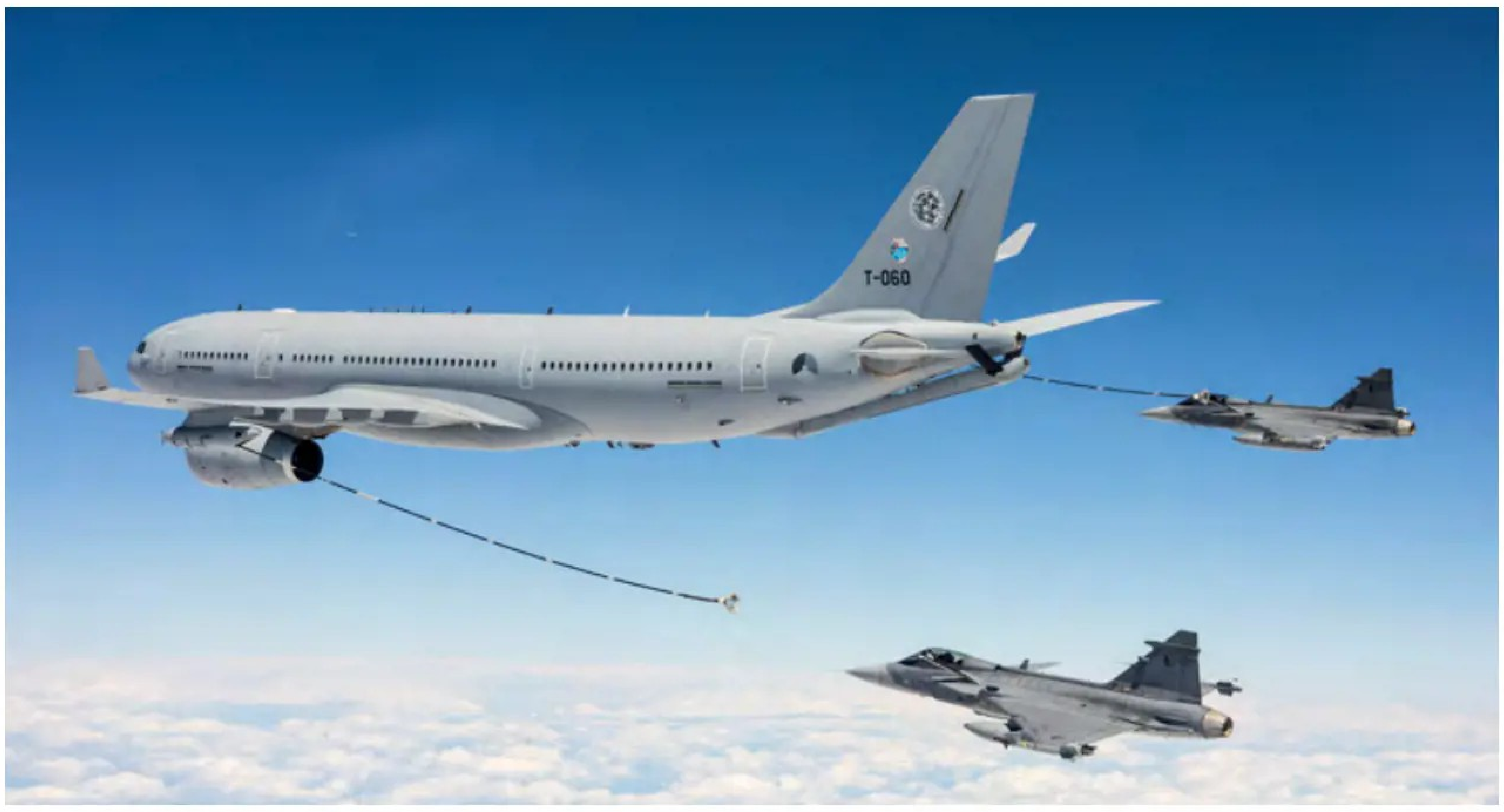
Five Czech Air Force Gripens from 211 Squadron 9235, 9236, 9239, 9240 and 9243, left Caslav Air Base on May 22, for a five-week Iceland Air Patrol deployment at Keflavik. Although their role there was to intercept any Russian Long Range Aviation bombers, like Tu-95 *Bears* or Tu-22M3 *Backfires* that might be flying close to Iceland, they would spend more time working with the local air traffic controllers of the Control and Reporting Centre (CRC).

The Czech Air Force Gripens participated in Iceland Air Patrol during 2014, 2015, 2016 and Baltic Air Policing in 2009, 2012, 2019, 2022. Quite a feat for an air force with just 14 of them, including two dual-seaters. They were due to leave Iceland on/by July 1. **afm**

Left: ***A close up of Gripen 9236, with the pilot sitting on a Martin Baker Mk10 ejection seat decoupling his oxygen mask to take some refreshment. The jet is fitted with live AIM-9P Sidewinders and a Litening IV pod, for identifying aircraft during an interception without getting too close. Russian aircraft in the past have behaved aggressively, that NATO prefers to use targeting pods – the downside to keeping their distance is the imagery isn't so detailed***

Two Gripens take on fuel from the MMU A330MRTT, while another two look on and the pilot of the fifth is taking the photos All photos, CzAF

On earlier deployments to Iceland, the Gripens would have had to land at RAF Lossiemouth in Scotland for fuel. Now its direct



A Gripen moving in for the drogue while the other is already in place. Unlike RAF Voyagers, the NATO A330 MRTTs are also equipped with a flying boom, as seen here. Fortunately, the RAF fighters are air-to-air refuelled using the hose and drogue system, but its not so helpful during multinational operations with F-16s or F-15Es

Four Gripens sit off the right wing of the A330MRTT over the sea, having taken on more fuel

With the A330MRTT's hose and drogues in sight, the Gripens get ready to get some fuel

Phoenix

The annual **Anatolian Pheonix** exercise at Konya, Turkey, continues to attract some interesting participants, as Cem Dogut discovered

Hosted by the Anatolian Eagle Training Center Command (AETC – Anadolu Kartalı Eğitim Merkezi) at the 3rd Main Jet Base Command (3 Ana Jet Üs Komutanlığı), Konya, this year's International Anatolian Phoenix exercise took place between May 12 and 23. Joining Turkey were the USA, Germany, Azerbaijan, Italy, Qatar, Poland, Romania, Slovakia and Saudi Arabia.

The AETC is a high-level training centre, providing realistic combat training opportunities to Turkish Air Force (TurAF) squadrons and friendly countries in a high-threat environment, more sophisticated than unit-level training in aspects such as airspace size, tactical ranges, threat emitters, and the number of participants. Since 2009, the Anatolian Phoenix Exercises have been conducted twice a year at the 3rd Main Jet Base Command, with the aim of training personnel rescue task force elements in a realistic operational environment and increasing the level of experience required for the current and future battlefield. Since 2012, they have been conducted both nationally and internationally.

Multiple objectives

In previous years, the exercise was hosted by AETC and conducted by the 135th Personnel Rescue and Forward Air Controller Squadron Command. Last year, the Squadron Command was raised to the Group Command level, and new Squadrons were established under this Group Command. The primary purpose of this is to ensure that the Squadron's duties are very comprehensive Dividing these duties among sub-squadrons means each squadron will specialise in its own field. The 136th Close Air Support (CAS) and Training Squadron was one of the units responsible for executing the exercise this year. The newly established 137th AKIP (Arama Kurtarma Ihtisaslı Personel – Search and Rescue Specialised Personnel) Squadron supported the 136th Squadron.

The distinguished observer (DV) and press day of the exercise was held on May 22.

Italian Air Force HH-101A helicopters participated in the exercise for the first time this year. One of the most capable Combat Search and Rescue helicopters in the world, the HH-101A, was the most notable helicopter at Anatolian Phoenix *All photos, author*

resurrected

Cougar helicopters from the Royal Saudi Air Force's SAF's 99 Squadron fly with 20mm cannon and 70mm rocket loads for CSAR mission. The squadron is based at King Khalid Air Base

The strengths of the AH-64E are not the weapons, but the AN/APG-78 Longbow Fire Control Radar. Longbow performs wide-area search and precise detection, location and classification of up to 256 simultaneous moving and stationary targets. The system prioritises the top 16 targets for immediate evaluation and, if necessary, engaged by the aircrew, are usually destroyed

The activity started with a briefing by Major Alper Okyay from the 136th CAS and Training Squadron, with around 40 local and foreign press members in attendance.

The main objectives of the exercise are to improve the interoperability of the PR Task Force elements (helicopters, joint terminal attack controllers (JTAC), Personnel Recovery (PR), and combat search and rescue (CSAR) teams) with the Air Force elements (fighter jets, Airborne Early Warning & Control (AEW&C) aircraft, transport aircraft, and unmanned aerial vehicles (UAVs), develop the Survival and Escape and Evasion methods, and increase the training level of the pilots. The exercise also aims to reveal the needs of personnel recovery operations (such as doctrine, organisation, training, material, leadership, personnel, and infrastructure), test new methods, weapons, and equipment by conducting Joint and/or Combined PR, CAS, Dynamic Targeting (DT), and Time-Sensitive Targeting (TST) missions in the exercise scenarios and improve/identify the level of interoperability and areas of co-operation with other countries. For this purpose, the types of tasks performed in the scenarios are:

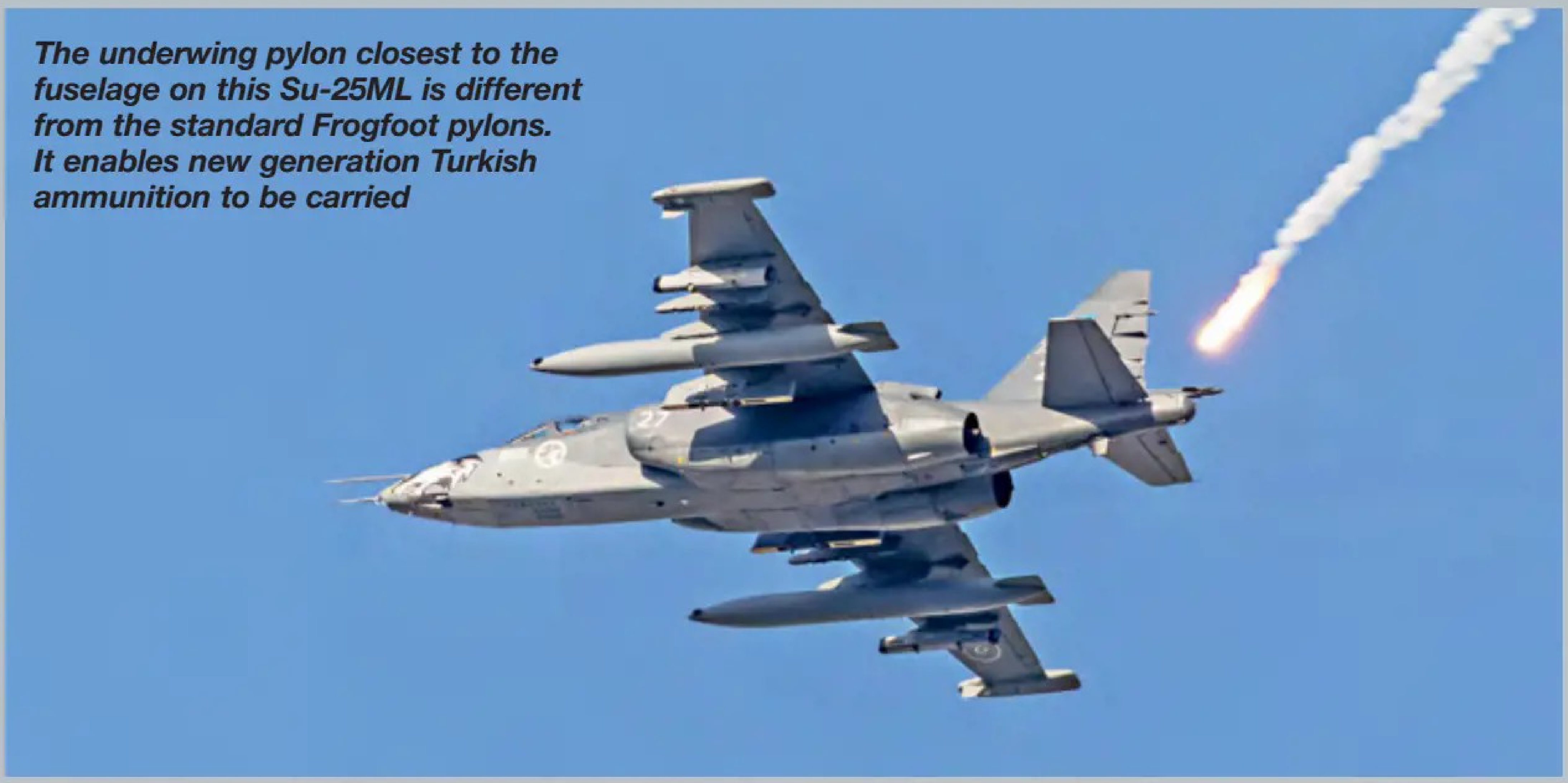
CAS, TST, CSAR, Ground Assisted Air Interdiction (GAAI), Air Assault, High Altitude Low Opening (HALO), Jump Convoy/Point Defence, Small Unit Tactics, Evacuation, Infiltration/Exfiltration, and High Electronic Warfare (EW) Environment Missions.

During the execution phase of the exercise, Convoy Protection, CAS, Casualty Evacuation, Parachute Jump, and CSAR missions were performed at the Konya Firing Range.

Ten countries – 3,000 participants

Turkish Air Forces Command participated in this year's event with 12 F-16C/D, a Hürkuş, a E-7T, 2x CN-235M-100, a ANKA-S UAV, a Akinci UAV, 2x AS-532AL, two T-70 CSAR and JTAC Teams, Land Forces Command with a T-70, 2x T129B ATAK helicopters and CSAR Team, Turkish Naval Forces Command CSAR and JTAC Teams, Special Forces Command with a S-70 Helicopter and CSAR Team, Gendarmerie General Command with with a S-70 Helicopter and CSAR Team. Coast Guard Command took part with an AB-412 helicopter and CSAR Team.

More than 3,000 participants took part in the exercise. Here's what each visiting country brought: United States – two UH-60M helicopters and CSAR and JTAC Teams; Germany – a Survival, Evasion, Resistance, and Escape (SERE) Team; Azerbaijan – two SU-25 and CSAR and JTAC Teams; Italy – two HH-101A helicopters and



The underwing pylon closest to the fuselage on this Su-25ML is different from the standard Frogfoot pylons. It enables new generation Turkish ammunition to be carried

Hürkuş is a training aircraft developed by Turkish Aerospace Industries (TUSAŞ), later armed to provide close air support. It detects its target with the FLIR fitted under the fuselage and designates it with a laser, the MAM-L laser-guided mini bomb it carries under the wing does the rest

The Special Forces Command T-70 helicopter. For self-defence it is equipped with the HEWS (Helicopter Electronic Warfare System) developed by ASELSAN to protect helicopters from missiles. The system is equipped with RF jammers, missile and laser warning receivers, plus radar warning receivers operating in different bands. It also carries the Aselsan ASELFLIR-410 electro-optic system

AS532AL/UL Cougars have been the Turkish Air Force's standard SAR and CSAR helicopters for many years. Two years ago, they received their first T-70 Black Hawk helicopters for this mission. The T-70 is a version of the S-70 produced under licence in Turkey with domestic avionics

CSAR Team; Qatar two AW-139, two NH-90 and two AH-64E helicopters, a C-17A, a C-130J-30 transport aircraft, two TB-2 UAV and CSAR and JTAC Teams; Poland – JTAC Team; Romania – two IAR-330 helicopters and CSAR and JTAC Teams; Slovakia JTAC and SERE Teams; Saudi Arabia two AS-532AL helicopters and CSAR and JTAC Teams.

Electronic warfare

Konya firing range is also the location of EHTES (Elektronik Harp Test Sahası – the Electronic Warfare Test Range). Here, tasks required in the International Anatolian Phoenix exercise can be carried out under the pressure of intense electronic warfare and simulated enemy air defence elements. The systems identified as representative enemy air defence elements in EHTES are: ZSU-23-4, SA-3, SA-6, SA-8, SA-11, SA-12, Skyguard, and MTS (Multiband Threat Simulator) for Pop-up threats. KORAL (a ground-based stand-off jammer system) is used as an Electronic Warfare System. Thanks to this system produced by Aselsan, enemy aircraft radars and air defence systems can be jammed.

This was the daily exercise routine: Air Tasking Order (ATO) is published a minimum six hours before a mission and planning is done accordingly. A main briefing is held with the participation of each element which is followed by teams and air elements carrying out their own briefings. A debriefing is held after the execution of the daily mission, and new plans are developed to guide the next mission based on the experience gained.

In the CSAR Joint Task Force Scenario, COSPAS-SARSAT satellites, airborne warning and control systems (AWACS) and UAVs provide the necessary data. Aircraft are used for CAS/rescue combat air patrol (RESCAP)/ Rescue Mission Commander (RMC)/rescue escort (RESCORT) missions to secure the CSAR package. Tanker aircraft provide air refuelling support. Sniper teams and attack helicopters are on the ground to eliminate imminent threats to survivors, as well as to protect Rescue and Medevac helicopter packages. All of this traffic is managed and controlled by a ground unit called the Rescue Co-ordination Centre (RCC).

The training areas used in the exercise were described by Major Alper Okyay as follows:

The West Area is primarily mountainous and mid-elevated, ranging from 5,000 to 7,000ft. This area hosts Infil/Exfil Missions and is suitable for parachute jumping. Beyşehir Lake is used for simulating air-sea rescue operations.

The East Area is primarily flat and has an approximate elevation of 4,000ft, where desert missions are simulated. The Electronic Warfare Training Area and Firing Range are also in this area.

In the Seydi Area, located in the South participants can fly over a steep, mountainous region with long and deep valleys, reaching a height of more than 8,000ft, suitable for conducting high-altitude CSAR/CAS missions. All areas are within approximately 70nm of the base.

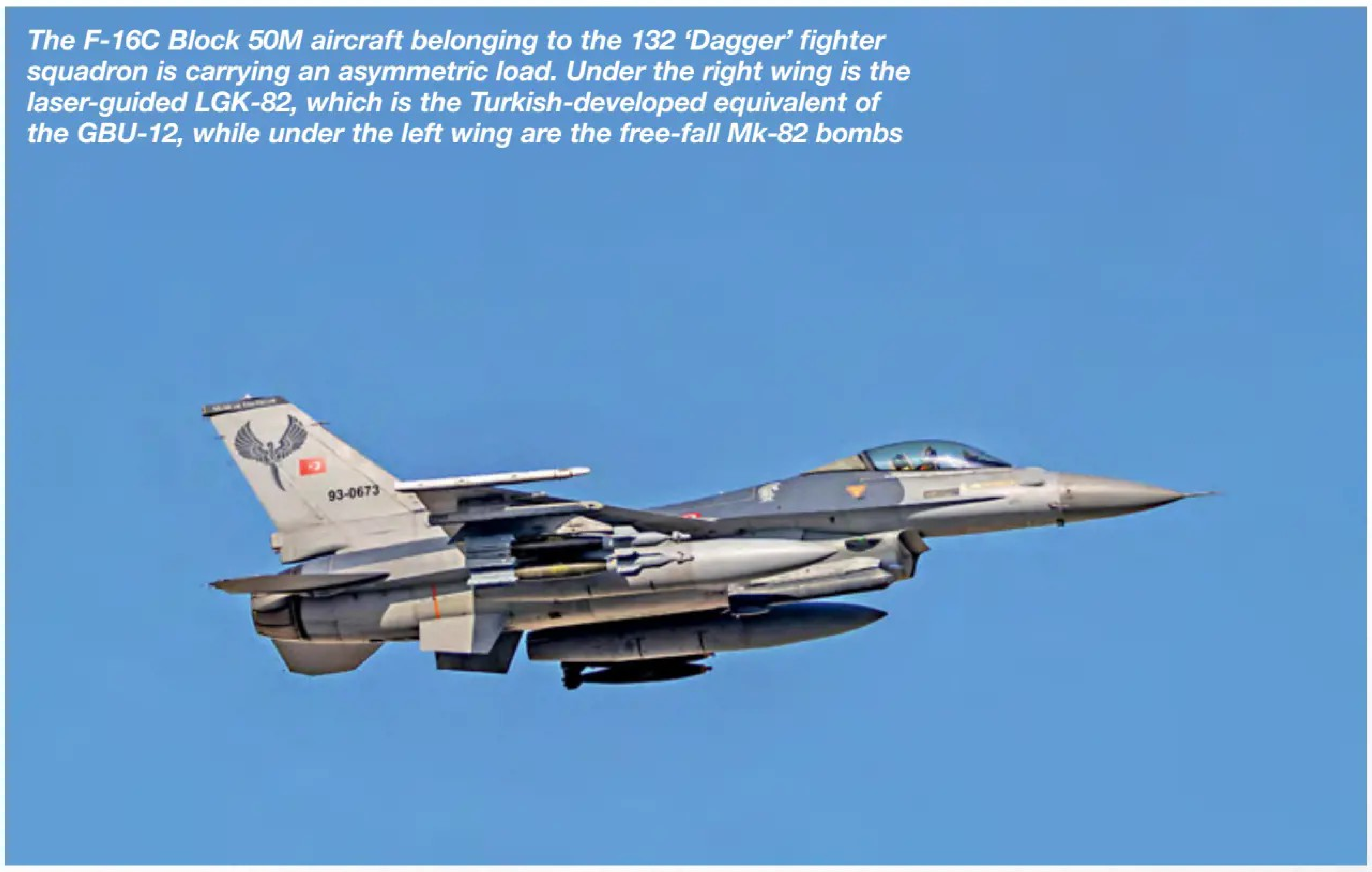
According to the exercise's leading scenario, there are two fictional countries: Red and Blue. Red Country has three operational air bases. Amid the ongoing conflict with Blue Country, Red Country has launched numerous air and missile attacks targeting civilian infrastructure, drawing widespread condemnation from the international community. In response, neighbouring states and allied countries have imposed a comprehensive, multi-domain sanctions package on Red Country.

The Blue Country and its allies decide to intervene in the Red region. DV Day recreates one day of this intervention.

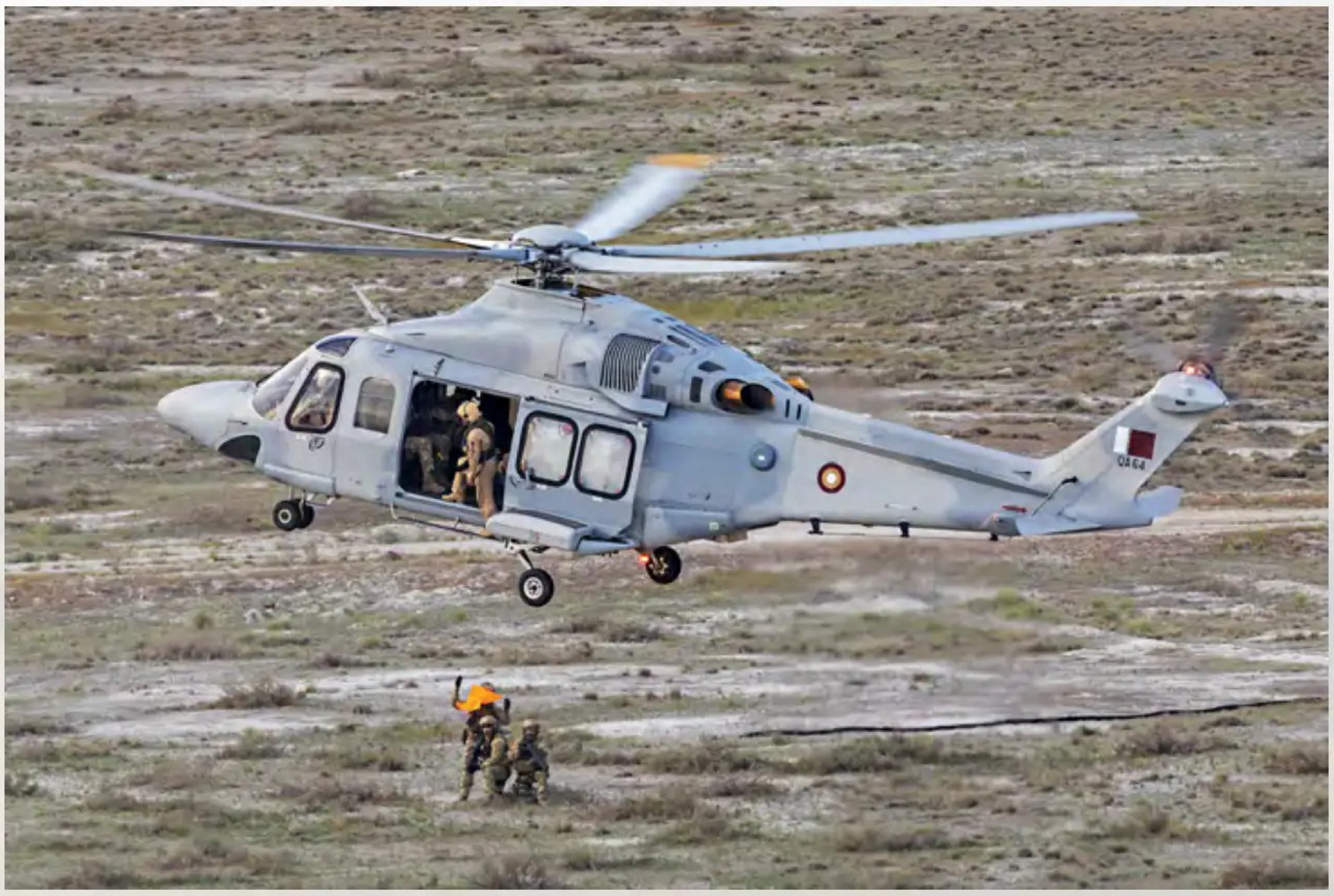
Before the F-16 package arrives in the region, the ground-based KORKUT SOJ (Stand Off Jammer) system performs

A Qatari C-17 drops supplies to ground personnel at the end of the exercise. In addition to its ability to carry cargo and personnel over long distances, the C-17 Globemaster has many different capabilities, including landing on dirt runways and dropping cargo and parachutists from low altitudes

Azerbaijan participated in the exercise with two Su-25s. The one with grey camouflage is the Su-25ML Lacin version. Lacin is the name given to the Su-25s modernised by Turkish Aerospace Industries and can use ammunition such as LGK-82, KGK-82 and SOM developed by Turkey



The F-16C Block 50M aircraft belonging to the 132 'Dagger' fighter squadron is carrying an asymmetric load. Under the right wing is the laser-guided LGK-82, which is the Turkish-developed equivalent of the GBU-12, while under the left wing are the free-fall Mk-82 bombs



An AgustaWestland AW-139 helicopter belonging to the Qatari Air Force lands for an evacuation mission. This and other Qatari equipment came to Turkey thanks to the C-17 in their inventory

electronic jamming to suppress enemy air defence systems. During this time, Lightning decoys come to the region and fly as fake targets. Taking advantage of the weakness in the suppressed air defence system, the attack package targets its objectives. According to the scenario, F-16s hit targets marked by Special Forces and JTAC. The F-16s successfully destroyed the targets with 500lb LGK-82 and Mk-82 general-purpose bombs. The JTAC in the area marks another enemy air defence system with a laser, and Hürkuş attacks this target with the MAM-L laser-guided mini bomb.

Later, two AH-101A helicopters from the Italian Air Force were dispatched to rescue the wounded soldier during the assault. While the helicopters were taking off, Qatari AH-64E helicopters arrived in the area due to fire from enemy forces. Apache helicopters destroy enemy elements with 30mm cannons and 2.75in rocket fire.

While the helicopters were flying away from the area under cover fire, an attack was made on the enemy convoy detected in the area. As part of this mission, Qatari AW139 and NH90 helicopters dropped personnel. To evacuate friendly elements in the area, Qatari helicopters were reinforced by two Saudi AS532AL and two Romanian IAR-330 helicopters.

A CSAR team with a T-70 belonging to the TurAF landed in the area to rescue personnel who were taken into enemy hands. At the end of the exercise, Qatari C-17A and C-130J-30 aircraft were airdropped to supply friendly elements in the region.

The exercise provides training for CSAR and JTAC elements from various forces and countries in a realistic environment, enhancing their capacity to work together. Thanks to the diversity of participating platforms and EHTES, they can work and train under air defence and electronic jamming threats suitable for a real war environment. In this respect, the International Anatolian Phoenix is one of the most essential exercises in the world. **afm**

TCSG 509
SAHİL GÜVENLİK
COAST GUARD

The AB-412EP SAR helicopter belonging to the Turkish Coast Guard Command was the most colourful helicopter in the exercise. The Coast Guard operates 14 helicopters of this type. They also participate in these military exercises to reinforce their training and gain experience

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Polish and Romanian F-16s on guard

Vipers over the Baltic

Polish and Romanian Air Forces have been manning NATO’s Baltic air policing from Šiauliai Air Base, Lithuania, with eight F-16s. **Giovanni Colla** went north to see them

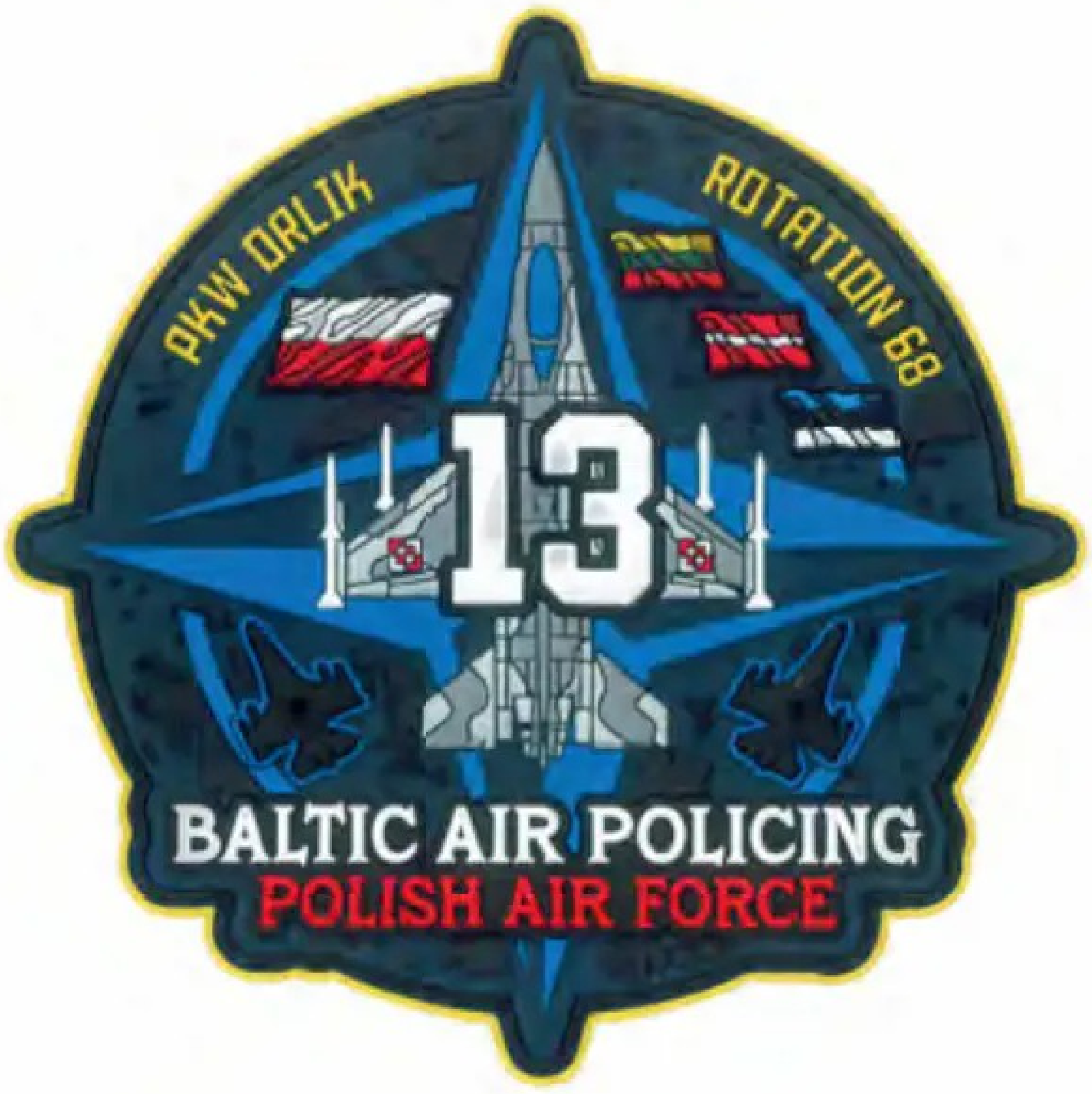
Two Romanian Air Force F-16s flying shoulder to shoulder with two Polish Air Force F-16s in echelon formation over the Lithuanian coastline *All images, Giovanni Colla*

Poland’s ‘Orlik-13’

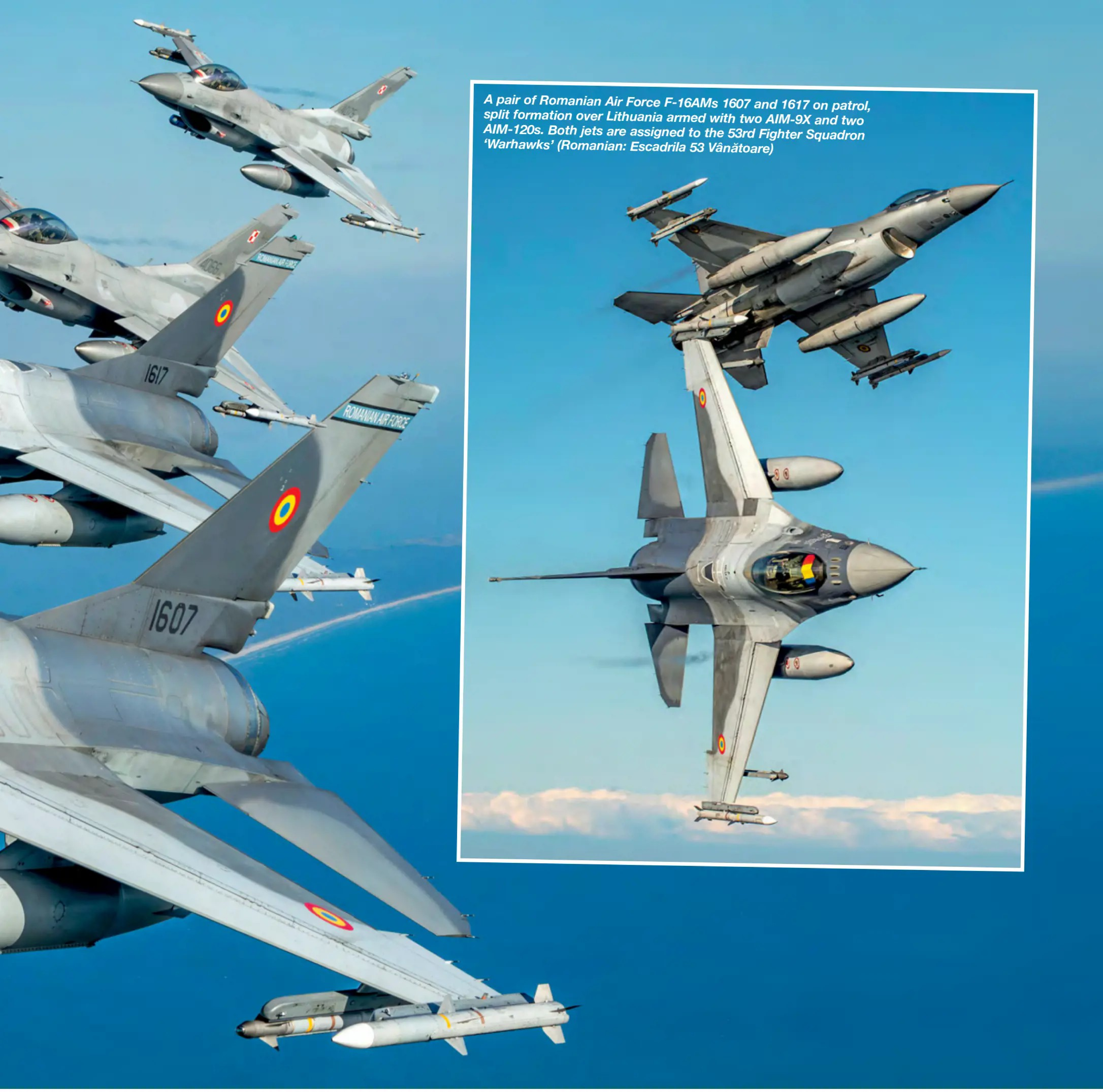
The Polish Air Force has been leading the NATO Baltic Air Policing (BAP) mission from Šiauliai Air Base since April 1, under the codename ‘Orlik-13’, marking the 13th deployment of Poland in support of airspace integrity over the Baltic states. A regular contributor to NATO’s peacetime defence activities, Poland continues to reinforce its position as a frontline guardian on the alliance’s northeastern flank.

The BAP mission, a cornerstone of NATO’s integrated air defence, was established in 2004 as Estonia, Latvia and Lithuania joined the alliance without their own air combat capabilities. The mission ensures continuous protection of Baltic airspace through a rotating deployment of allied air forces. Poland, one of the earliest and most consistent contributors to the initiative, maintains a robust operational presence in the region. The current rotation, ‘Orlik-13’, is led by Lt Col Dawid ‘Shooter’ Kij, and comprises four F-16C-52CFs and a full support detachment drawn from the 32nd Tactical Air Base in Łask.

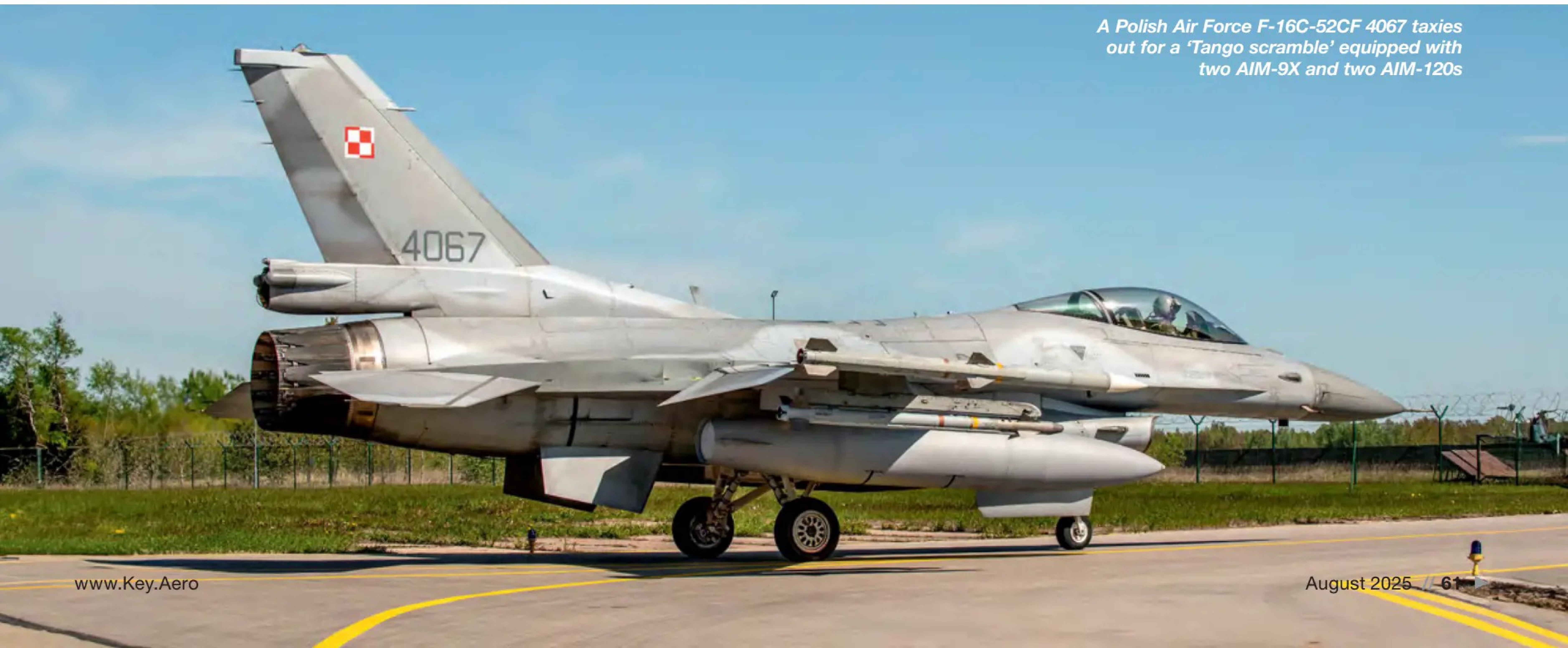
Lt Col Kij said: “The Orlik-13 mission will conclude on August 1. Our main task is to secure the airspace of the Baltic States –



Polish Air Force PKW Orlik, Rotation 68



A pair of Romanian Air Force F-16AMs 1607 and 1617 on patrol, split formation over Lithuania armed with two AIM-9X and two AIM-120s. Both jets are assigned to the 53rd Fighter Squadron 'Warhawks' (Romanian: Escadrila 53 Vânătoare)



A Polish Air Force F-16C-52CF 4067 taxies out for a 'Tango scramble' equipped with two AIM-9X and two AIM-120s

Armed and ready, a formation of 'Vipers' over the Baltic Sea

Exercise Hedgehog 25

The exercise was held in Estonia from May 5 to 23 and was the Baltic state's largest annual military exercise. Participants included Canada, Denmark, Finland, France, Germany, Latvia, Poland, Portugal, Romania, Sweden, the UK, the US and host nation Estonia, with more than 16,000 troops involved across land, sea and air.

As part of the drill, four Royal Air Force Typhoon FGR4 jets from NATO's air policing mission in Malbork, Poland, forward deployed to Ämari Air Base in Estonia. This move demonstrated flexibility in allied basing options and extended mission endurance. "Forward deployment allows us to maximise Typhoon mission time," said Sqn Ldr Morrison-Smith, adding that hot-pit refuelling enables rapid turnaround on the ground, enhancing operational agility. Romanian and Polish F-16s from the detachment in Lithuania also joined, conducting CAS and air interdiction (AI) to support ground operations. The air component featured a variety of aircraft, including fighter jets and transport helicopters, conducting missions to simulate real-world combat scenarios and test allied readiness.

On May 9, RAF Chinooks airlifted infantry units from Latvia to Estonia, showcasing NATO's air mobility and joint logistics capabilities. Estonian defence forces also demonstrated air defence improvements. The 1st Infantry Brigade reached combat readiness, integrating new technologies such as thermal sights, advanced targeting and the Mistral missile system to enhance air threat response. This high tempo of multinational activity provides critical exposure. Lt Col Dawid Kij said: "Flying with NATO allies improves interoperability and builds trust. We also benefit from face-to-face co-ordination, especially since the AWACS aircraft are stationed close by," (see *AFM July, NATO Eyes in the Skies: Away the AWACS p38-41 and Operations in the North, p42-45*). "We can debrief with them directly – something you can't replicate over video call," Kij explained.

10
SQUADRON
POLISH AIR FORCE
BALTIC AIR POLICING

Polish Air Force BAP, 10 Sqn

Estonia, Latvia and Lithuania – but also Poland itself, because we carry out missions there as part of this deployment." While the task might be routine on paper, the challenges faced by the detachment are anything but trivial: "The biggest logistical challenge is the distance from our home base," Kij said. "Getting spare parts here isn't impossible, but it's more difficult than in Poland. At home, we have full repair and replacement capabilities. Here, those are limited." Despite these limitations, the team operates with high efficiency. "It's not a major problem. If we need something urgently, we can bring it by air. But it's one of the realities of being deployed."

Beyond logistics, the Baltic environment introduces unique operational constraints, particularly over the frigid sea. "Even though it's summer, the Baltic Sea is too cold for safe swimming," Kij said. "This means our pilots must fly in anti-exposure suits almost all the time. It's uncomfortable, especially when it's nearly 30°C on the ground." The pilots are also flying more maritime sorties than they would at home: "We fly over the sea in Poland too, but not to this extent.

Two Polish Air Force F-16C-52CFs break formation

A formation break of two Romanian Air Force F-16Ams, 1607 and 1617, on patrol. The present Romanian detachment led by Colonel Vasile Petrea is the second equipped with F-16 fighters in Lithuania

Fully armed in QRA configuration with two AIM-120s and two AIM-9X, these Polish Air Force F-16C-52CFs on watch over the Baltic Sea

'Stronger together' is not just a concept, it is really demonstrated here showing two Romanian Air Force F-16s flying alongside two Polish AF F-16s. The two allies are flying air policing sorties securing the NATO skies above Estonia, Latvia and Lithuania under the collective Baltic air policing mission. Both detachments took over the 68th rotation of allied fighters executing this mission from April 1, 2025

Here it's almost 100% of flights. That's new for many of us."

Given Šiauliai's proximity to the Russian exclave of Kaliningrad, Polish pilots must operate with heightened awareness: "When it comes to navigation, yes, proximity to Russian airspace has an impact," said Kij. "We can't fly all over Europe freely. There are firm borders we cannot cross." Yet, he emphasised the procedures are well established. "We have experience flying near Russian borders in Poland. It's standard. For our personnel, this is a routine mission. The tactics and procedures are the same as at home." He also acknowledged the elevated frequency of intercept missions: "There's probably a higher chance of getting an 'Alpha scramble' here than in Poland, simply because of the nature of air traffic between the Russian mainland and Kaliningrad."

Co-operation with allied nations is a key strength of BAP operations: "We began co-ordinating with Romania and Portugal back in February," Kij explained. "We divided the four-month deployment into 'Cold Weeks' – dedicated training periods – and assigned them equally among the nations." Joint exercises and air policing drills are frequent: "We fly together, we run training for them and vice versa. We do a lot of CAS [close air support] missions, though usually not together. We also participate in major NATO exercises like Ramstein Alloy and Hedgehog 25, alongside Eurofighters from the UK and Swedish Gripens."

Maintaining combat effectiveness

Even while on alert, training remains a priority. "Besides Alpha scrambles, training is the most important part of our flying schedule," Kij stressed. "Proficiency and readiness are everything. If we only flew intercepts, we wouldn't be able to maintain combat effectiveness in other mission sets like CAS or elite deployments." To maintain this, the unit carefully balances its rotation schedules: "We rotate personnel every few months to prevent skill atrophy. In past deployments, pilots only flew air policing sorties and that wasn't sustainable." Describing the intercepts, Kij was clear – professionalism takes precedence: "If there's unidentified air movement and no radar or IFF response, we launch. Our goal is to identify the aircraft. We don't perform aggressive manoeuvres. Safety and procedure are paramount. This isn't a Hollywood movie – we don't fly two metres from someone's cockpit." Despite the mission's complexity, no single incident has stood out as extraordinary: "So far, it's been standard. We've had 'Alpha scrambles', yes, but nothing unusual or demanding," Kij noted. "Frankly, we're used to it. The 32nd Air Base has maintained combat readiness since 2011. Most of us have done this many times." As the mission moves toward its conclusion in early August, Orlik-13 remains a testament to Poland's enduring commitment to NATO's collective defence and the security of its Baltic allies.

A front shot of a Romanian Air Force F-16 'Viper' armed and ready for a mission over the Baltic states

Two Romanian Air Force F-16s taxi out from their shelters for an afternoon 'Tango scramble', equipped with two AIM-9X and two AIM-120s. Time is crucial in this phase and jets need to be airborne quickly to maintain NATO standards

Romania's 'Carpathian Vipers II'

On the morning of March 31 this year, under the watchful eyes of NATO command and with Romanian and allied flags flying in the cold Baltic wind, 'Carpathian Vipers II' officially assumed the NATO Baltic Air Policing Mission from Šiauliai Air Base in Lithuania. As four F-16AMs of the Romanian Air Force taxied to readiness shelters, fully armed and crewed, the third Romanian rotation to the Baltic theatre began its watch. These aircraft – ready to scramble at a moment's notice – stood configured in full QRA loadout, each jet carrying two AIM-120 AMRAAM beyond-visual-range missiles and two AIM-9X Sidewinders for close-in engagements, a standard but potent mix tailored for fast-response identification and deterrence missions over NATO's northeastern flank.

The 'Carpathian Vipers II' deployment consists of around 100 personnel from the 53rd Fighter Squadron – Fetesti Air Base (Baza 86 Aeriana), supported by engineers, controllers and intelligence specialists, and falls under the operational command of NATO's Combined Air Operations Centre (CAOC) Uedem, Germany.

Colonel Vasile Petrea, commander of the detachment, assumed leadership during the hand-over ceremony held on March 13 at Romania's 86th Air Base, Fetesti, Lieutenant Aviator Gheorghe Mociorniță marking the transfer of responsibility under the Joint Forces Command. "Our mission is clear: to safeguard the security and integrity of Baltic airspace," Col Petrea said, "and to do so with discipline, interoperability and the full combat readiness our NATO partners expect from us."

This is Romania's third deployment to the BAP mission: the first in 2007 saw MiG-21 LanceRs from the 71st Air Base deployed to Lithuania; the second, designated 'Carpathian Vipers', took place between April and July 2023 (see *AFM* August 2023), when the same 53rd Squadron deployed four F-16s

ROMANIAN AIR FORCE
CARPATHIAN
VIPERS
eAP
2025
LXVIII

Romanian Air Force Carpathian Vipers, eAP 2025

1. PUSH BUTTON TO OPEN DOOR
2. PULL RING OUT 6 FEET TO
JETTISON CANOPY
RESCUE

A Polish Air Force 'Viper driver' in his comfort zone. In under ten minutes he will be airborne from the runway of Šiauliai Air Base

from the 86th Air Base for enhanced air policing. The current 2025 deployment reflects the maturity of Romania's modernised air combat capability and its deepening role as a security provider on NATO's eastern flank.

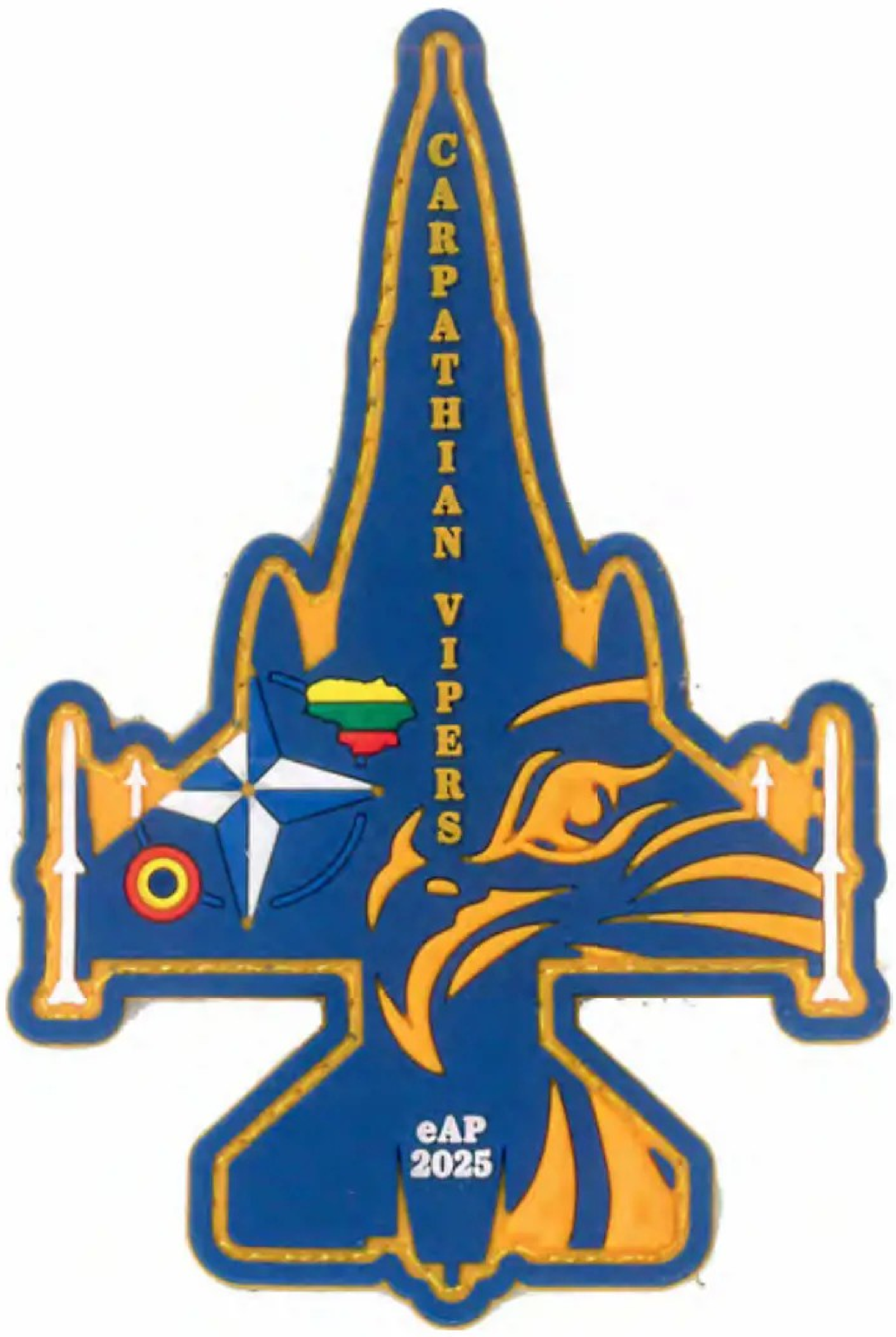
Following a staggered airlift and redeployment process completed on March 27, the full contingent of Carpathian Vipers touched down at Šiauliai and assumed enhanced air policing (eAP) responsibilities, replacing the outgoing allied rotation. The mission's operational launch was formally recognised during an official ceremony attended by Chief of the Romanian Defence Staff General Gheorghiță Vlad and high-ranking officials from Lithuania, Poland, Italy and France.

Gen Vlad said: "NATO unity goes beyond borders. It is consolidated through the presence of multidomain allied forces and joint training activities. These efforts strengthen our defensive posture and ensure the preservation of freedom and security across the Euro-Atlantic area."

In bilateral talks with his Lithuanian counterpart, General Raimundas Vaikšnoras, Gen Vlad emphasised the importance of pilot training co-operation and Romania's contribution through its European F-16 Training Centre (see *Building Ukraine's F-16 force*, p30-35), as well as continued support to the Moldovan National Army in enhancing its defence capabilities. Gen Vaikšnoras thanked Romania for its visible and reliable commitment to NATO's collective defence.

Adapting quickly

From a tactical perspective, the deployment is demanding. Positioned more than 600 miles (1,000kms) from home, the Carpathian Vipers must operate without the full logistical and technical infrastructure of their home base. Every component, from radar spares to ECM pods, must be prepositioned or airlifted. The QRA jets, always on standby, must maintain absolute readiness – scramble times are measured in minutes. Moreover, flying over the Baltic Sea, even in warmer months, imposes a constant requirement for anti-exposure suits, increasing pilot fatigue. Despite high temperatures on the ground, the danger of ejection over cold waters remains a critical factor in flight preparation. Maritime sorties now make up nearly all training and operational flights – far exceeding Romania's normal operational profile back home.



Romanian Air Force Carpathian Vipers

"We're flying almost 100% of our missions over the sea," Col Petrea confirmed. "It's a different environment and it demands a different kind of focus from our pilots. We train for this and we adapt quickly." Training is not limited to QRA drills. During designated 'Cold Weeks', the Romanian detachment integrates fully with its Polish (Orlik-13) and Portuguese counterparts – the latest deployed at Amari Air Base with four F-16AMs from Monte Real Air Base – conducting interoperable scrambles, tactical intercepts and simulated combat scenarios. Romanian F-16s often fly with NATO's AWACS aircraft, which are stationed nearby; a major advantage for live debriefs and tactical co-ordination. "Here we have AWACS just across the fence," Petrea explained. "Being able to debrief face-to-face after missions adds significant value. It's the kind of advantage that improves real-world readiness."

NATO deployed AWACS to Lithuania on April 23, 2025, when the first E-3A AWACS aircraft landed at Šiauliai Air Base to support the NATO Enhanced Vigilance Activities in the Baltic region. Over the following weeks, a detachment of three AWACS aircraft operated from Lithuania, monitoring the Baltic Sea area and reinforcing NATO's presence on its eastern flank. This deployment also highlighted the NATO Agile Combat Employment (ACE) concept, enhancing operational flexibility and resilience through dispersed basing and improving interoperability with the host nation. As NATO's 'eyes in the sky', AWACS aircraft provided vital air and maritime surveillance capabilities. They support a range of missions, from peacetime air policing and counterterrorism to crisis response and full-scale military operations. The presence of AWACS at Šiauliai ensures continuity of operations and demonstrates the alliance's readiness and deterrence posture, while highlighting the strategic role of Šiauliai Air Base in supporting NATO air power in an evolving security environment.

Romania's contribution to Baltic air policing is not symbolic but operational and strategic. The F-16s deployed in Šiauliai are not just placeholders but active deterrents, capable of engaging any unauthorised or non-co-operative aircraft in NATO airspace. Their presence underlines the enduring relevance of the Article 5 commitment, ensuring that NATO's skies are never left unguarded.

As Carpathian Vipers II continued its rotation through July 2025, it was building on the legacy of previous deployments and setting the stage for future contributions. The performance of this rotation will directly inform the expansion of Romania's fighter fleet and further integration into allied aerial operations. **afm**

Two Polish Air Force F-16C-52CFs on patrol

Keeping ship shape

Francois Notre went aboard the French Navy helicopter carrier Tonnerre to experience the impressive helicopter trials

During landings performed by Caïman pilots, the operational cargo hold member (MOS) plays an essential role during these delicate flight phases.

The PHA Tonnerre is essentially a floating building, standing ten stories high. The helicopter flight platform is a meter higher than the deck of the Charles de Gaulle aircraft carrier.

Near the Var coastline, an NH-90 Caïman helicopter descends toward spot 5, guided by the "yellow dog" of the PHA Tonnerre, during a Touch and Go (TAG) maneuver.

SI VIS PACEM PARA
TONNERRE
L9014

PHA Tonnerre emblem (on the left) and ALAT on the right.

As a cornerstone of the French Navy's amphibious fleet, Port-Helicopteres Amphibie (PHA) Tonnerre actively participated in Exercise Dragoon Fury in the Mediterranean for two weeks in March. Her vast flight deck was transformed into an essential training ground for Army helicopter qualifications, where pilots, deck crews, and operational teams refined their expertise in challenging conditions. Beyond strengthening operational capabilities, the exercise provided a unique opportunity to integrate cutting-edge naval technology, while driving innovation and expanding the horizons of amphibious warfare.

The French Army Air Corps (ALAT) deployed two Tiger and three Caïman helicopters from the 1st Régiment d'Hélicoptères de Combat (RHC), stationed in Phalsbourg, Lorraine, located nearly 900km from Toulon, where the exercise took place.

The objective is to certify ALAT crews for landing operations aboard a PHA, a complex and highly specialized process requiring advanced technical skills. Conducting manoeuvres from a moving vessel in a dynamic and potentially contested environment demands exceptional co-ordination, precision, and adaptability. Pilots must refine their approach techniques in challenging maritime conditions, while deck crews work in harmony to ensure safe landings, efficient refuelling, and seamless operational readiness. These qualifications not only refine individual expertise but also underscore the critical role of helicopters in contemporary amphibious warfare. To maintain peak proficiency, pilots and crews must periodically undergo rigorous training to refresh and validate their certification.

Pilots must seamlessly integrate into the PHA's air traffic and adhere to Ship Control Approach (SCA) procedures, where the helicopter, guided by instruments, is directed by the ship's controller. The controller provides critical parameters such as descent path, speed, and heading, ensuring a safe approach to the vessel. During the landing phase, pilots rely on visual aids to provide a precise approach. They first align with the IPD (descent slope indicator) before transitioning to guidance from the 'yellow dog' (flight deck director), who manages the final movements after hovering. The descent slope indicator

Above: ***During flight deck qualifications, a 1st RHC instructor joins the pilot, supervising simulated failure scenarios to assess their response and decision-making***

Left: ***A dozen companies from the Defence Industry were involved in Dragoon Fury, integrating the latest drone technologies into naval experimentation to enhance the capabilities of modern amphibious operations*** *Marine Nationale*

(IPD) serves as a crucial visual guide for pilots, offering a sector-based reference aligned with a stabilized roll and pitch slope, adjustable between 2° and 5° above the horizon. The system projects a beam extending 15° laterally on either side of the approach axis, which itself can be modified between 0° and 90° relative to the ship's heading.

Within this beam, pilots receive colour-coded signals to ensure precise alignment:

- Green signifies correct positioning along the designated slope
- Flashing yellow warns that the aircraft is above the ideal descent path
- Flashing red indicates the aircraft is below the intended approach angle

This system enhances landing accuracy by providing immediate visual feedback, helping pilots maintain the safest trajectory during maritime operations. At night, the signal remains visible up to 3nm (5.5km), ensuring pilots can maintain a safe approach even in low-light conditions. To further enhance landing precision, the PHA Tonnerre is equipped with an approach radar and a horizontal reference bar (BRH), providing additional guidance throughout the descent.

Despite their extensive experience, pilots of the 1st RHC remain fully immersed in the cockpit, relying on specialised terminology and precise communication to execute flawless landings. This qualification exercise plays a vital role in enabling the deployment of combat helicopters as part of an air-mobile group (GAM) operating from the sea – a capability successfully demonstrated during Operation Harmattan off the Libyan coast in 2011.

The fight deck landing qualification is meticulously supervised and standardised to ensure pilots acquire the necessary expertise for safe operations aboard naval vessels. This certification extends beyond Army pilots, being available to personnel from the Air Force, Navy, and Gendarmerie, thereby broadening interoperability across military branches.

At night, under a clear sky, the sea turns into a mirror reflecting the stars on its surface, creating potential spatial disorientation. However, thanks to the ultra-modern cockpit of the helicopter, pilots can quickly refer back to their instruments to stabilize and ensure safety.

This qualification exercise plays a vital role in enabling the deployment of combat helicopters as part of an air-mobile group (GAM) operating from the sea—a capability successfully demonstrated during Operation Harmattan off the Libyan coast in 2011.

The qualification process begins with foundational training at the School for Specialization in Shipborne Helicopters (ESHE), located in Lanvéoc-Poulmic, Finistère. Here, pilots master essential procedures for landing on naval vessels before advancing to specialised training within their respective units, refining their skills for operational readiness. "It is then up to each military branch to continue training its crews and formally validate their qualifications," explained Lieutenant Commander, the deputy aviation commander (COMAVIA) aboard PHA Tonnerre. Holding a key role in onboard operations, the COMAVIA serves as the primary link between the PHA and DETALAT (ALAT Detachment), ensuring seamless co-ordination. Additionally, they act as the aviation advisor to the ship's commander, overseeing flight operations and safety protocols to maintain operational efficiency.

"As the aviation watch officer, I am responsible for monitoring all aspects of flight safety, ensuring every operation adheres to strict protocols," explained Lieutenant Commander, a Panther pilot from Flotilla 36F and a certified night landing instructor. "My role encompasses enforcing precise procedures for helicopter operations on the flight deck and throughout the aviation space, guaranteeing seamless and secure manoeuvres."

A successful qualification requires six landings: six touchdown manoeuvres, four of which must be within the marked spot; a wheel outside the 'spot' renders the attempt invalid.

"Landing on a flight deck is not a mass sport, and navigating over open water comes with distinct challenges, especially when judging altitude, which can lead to disorientation," said Captain Sébastien, a NH-90 Caïman pilot in the 4th Manoeuvre and Assault Helicopter Squadron (4th EHMA).

At night, under a clear sky, the sea becomes a mirror, reflecting the stars on its surface and creating potential spatial disorientation. However, thanks to the ultra-modern cockpit of the helicopter, pilots can quickly refer to their instruments to stabilize and ensure safety," explained Sébastien, who has a total of 1,700 flight hours, of which 1,200 are on the Caïman.

"I am currently aboard the PHA Tonnerre for the joint exercise Dragoon Furry, while also using this deployment to complete my day-night landing qualifications and advance to the role of Caïman commander," Sébastien said.

During flight deck qualifications, a 1st RHC instructor joins the pilot, supervising simulated failure scenarios to assess their response and decision-making, such as an engine shutdown or autopilot malfunction, to determine their ability to land the aircraft on the ship under degraded conditions safely. "Daytime landings require a high degree of precision, but executing a night landing on a single engine is one of the most demanding skills a pilot can master," Sébastien emphasised.

The foremost landing spot on the PHA presents an additional challenge: without the guidance of the Yellow Dog (flight deck officer – a nickname relating to the visibility vest),

pilots must rely entirely on the sea as their visual reference. In these critical moments, the operational cargo hold member (MOS) plays a decisive role in ensuring a secure and controlled landing.

Projected Aero mobility from the PHAs

The French Navy operates three amphibious helicopter carriers (PHA) – Mistral, Tonnerre, and Dixmude – delivered in 2006, 2007, and 2012, respectively. These versatile warships, measuring 199m in length and 32m in width, with a displacement of 21,500 tons, are designed to project amphibious and aero mobile units of the Army. With a 6,400m² flight deck, featuring six landing spots and two elevators servicing a 1,800m² hangar equipped for Tiger, Cougar, and Caïman helicopters, PHAs form the backbone of air combat operations conducted from the sea. Another key asset is the floodable well dock, a 900m² cargo hold that can be filled with water. When submerged by a few meters, this system allows amphibious landing craft to enter and exit through the ship's rear.

Left: ***To be fully operational both day and night, the crews of the 1st RHC, already qualified for daytime landings, conduct twilight and night-time flights.***

Commanding the PHA Tonnerre, is Captain Adrien Schaar, who highlighted the capabilities of this second-largest ship in the French Navy, surpassed only by the Charles de Gaulle aircraft carrier.

He said: "The PHA's greatest strength is her versatility – a true Swiss Army knife of naval warfare. She can project forces from sea to land, deploy combat helicopters, and support amphibious landing operations via her well dock, bypassing traditional port infrastructure. It also serves as a command ship, capable of embarking 150 staff officers in modular, pre-connected facilities that provide working conditions like those of a land-based headquarters. Thanks to its SIC command system and SENIT 9 combat management system, the Tonnerre ensures efficient force co-ordination at sea.

"With these capabilities, the Tonnerre seamlessly integrates into a French Carrier Strike Group or NATO Response Force, where she is classified as an LHD (Landing Helicopter Dock). Additionally, she can contribute to UN-mandated peacekeeping missions, reinforcing her role as a strategic naval asset.

"To intervene in crisis zones, we also have an onboard field hospital with operating rooms and radiology facilities. Finally, she serves as a training ship. Every third year, the PHA Tonnerre hosts Naval Academy students for a unique mission called Mission Jeanne d'Arc. While the boat navigates operational zones, the onboard staff headquarters are transformed into lecture halls and classrooms for future career naval officers.

"In summary, the PHA is an exceptionally versatile tool for crisis management in joint or multinational contexts, thanks to its adaptability and interoperability. This flexibility makes it a significant asset for France in its overseas operations."

harnessing innovation for enhanced operational readiness

As modern warfare evolves, the integration of cutting-edge technology into amphibious operations has become essential. Dragoon Fury 2025 exemplifies this shift, merging advanced drone systems, multi-sensor intelligence platforms, and precision weaponry into a realistic combat scenario. Dragoon Fury 2025 demonstrated the French Navy's commitment to tactical and technological advancements. This large-scale exercise mobilised nearly 700 military personnel from both the French Navy and the Army, including a detachment from the 1st RHC (ALAT), troops from the 2nd Marine Infantry Regiment (RIMa) based in Le Mans, as well as units from the amphibious flotilla and Flotilla 36F.

Additionally, a dozen companies from the Defence Industry and Technological Base (BITD) contributed to the event, integrating cutting-edge technologies into naval experimentation to enhance the capabilities of modern amphibious operations in contested environments.

One of the primary objectives was to refine military tactics and evaluate new equipment under realistic operational conditions.

To achieve this, a wide range of innovative technologies was deployed:

- UAV (aerial/Schiebel S-100 Cam copter and Delair DT46 and UX11), USV (surface/ Exail's DriX H8), and UUV (underwater/ Diodon HP30) drones, designed for intelligence gathering and reconnaissance ahead of a ground assault.
- A tethered aerostat (A-NSE T-C60L), equipped with advanced sensors and electro-optical systems, provides an enhanced strategic view of the operational area.
- Remotely operated munitions, strengthening the PHA's self-defence capabilities and enabling precision strikes on fixed targets.

The Delair DT46 UAV, a specialised intelligence, surveillance, and reconnaissance (ISR) drone, has already been integrated into several French army artillery units and underwent extensive testing. Its unique propulsion system enables both vertical take-off and landing (VTOL) while also allowing it to be launched from a ramp as a fixed-wing aircraft, maximising endurance and operational versatility.

Inspired by the Wildfire exercise conducted in September 2024, the French Navy reaffirmed its commitment to innovation by accelerating the pace of experimentation. Instead of following conventional qualification and testing phases, new technologies were seamlessly incorporated into an operational setting for real-world evaluation.

The exercise progressed through two key stages: technical preparation, where individual systems were tested for functionality and interaction, and operational implementation, where these technologies were deployed in a realistic tactical scenario.

The highlight of Dragoon Fury took place between March 11 and 13, with a landing operation near Bormes-les-Mimosas. After several aerial manoeuvres conducted by helicopters from the 1st RHC, troops from the 2nd Marine Infantry Regiment (RIMa) were deployed along the coastline, showcasing the French Navy's amphibious capabilities, in co-ordination with experimental drone systems.

The exercise unfolded in three major phases of tactical experimentation:

Before – intelligence gathering and reconnaissance;

During – deep strikes, mine warfare, ground force deployment, and aerial combat from the PHA;

After – support for ground troops and defence against multi-domain threats (cyber, information warfare, electronic warfare).

As warfare continues to evolve, these types of exercises remain an essential component of the operational readiness cycle, ensuring preparedness for high-intensity missions and amphibious force projection.

Thanks to this approach, Dragoon Fury achieved remarkable success, particularly in enhancing inter-service collaboration through the integration of advanced drone technologies. It also provided valuable insights to military strategists and defence industry innovators. **afm**

DOING IT THE FRENCH WAY

As it does every year, the French Air and Space Force launched a **Pégase** mission in April 2025, this time in Europe, pending a possible larger-scale deployment elsewhere next year. **Henri-Pierre Grolleau** reports

A mixed formation comprising a Rafale B and a Polish F-16D Fighting Falcon above the Polish countryside near Poznań during Pégase 2025 All photos, author

Pégase missions have become the signature of the French Air and Space Force (FASF) long-distance projections. They are the subject of careful preparation: "The route for Pégase 2025 was finalised at the beginning of 2025," explained General Patrice Hugret, Commander of the Pégase 2025 mission. "We are now opting for a long-distance deployment in even-numbered years, and a shorter mission in odd-numbered years. Our goal is to strengthen our relationships with key partners and achieve various effects. During the preparation phase, we carefully studied the detachment format, destinations, routes, and desired effects, including the strategic signal and demonstration of our capability to act swiftly and reassure our partners. All of this is the subject of dialogue, reflection, and analysis between the French Chief of Air and Space Staff, the FASF's Air Defence and Air Operations Command, the FASF's HQ, including its International Relations Office, and the various units involved. We also consider operational readiness and training objectives for our personnel. From there, we generate resources while maintaining the right balance between what we commit to Pégase and what we retain, in France or elsewhere, so as not to penalise other operational missions and the daily organic training of the squadrons."

An F-16C and a Rafale C share the ramp at Poznań Air Base

> "The weather was marginal, but the two bombers managed to deliver a live GBU-12 each on the Lomben firing range, near the town of Kalix, with both targets illuminated by Swedish special forces."

Desired effects

For the Pégase 2025 mission, three countries were selected for the deployment of the FASF force: Sweden, Poland, and Croatia. "The international context lends itself to this choice, with the deployment being divided between Northern Europe, Central-Eastern Europe, and the Balkans," General Hugret continued. "We are therefore covering an immense area in nine days, stretching from the Far North to the Adriatic Sea. It is a true demonstration of our operational expertise and an exciting expeditionary mode, derived from the NATO concept known as ACE or agile combat employment. Applicable to all areas of the world, it is a concept in which we excel because we rely on our internationally recognised expertise in the fields of planning, operations, and logistics."

Several objectives were set for Pégase 2025:

- Reassure the countries on Europe's eastern flank and demonstrate France's determination to participate in the defence of European interests in the broadest sense, by rapidly mounting a force and power projection operation for their benefit, with an AWACS, in-flight refuelling tankers, and multiple fighter jets, all supported by a logistical chain between France and the forward bases.
- Strengthen partnerships with allied countries. For example, Pégase 2025 represented the third deployment of French military aircraft in Sweden this year, following the deployment of an MRTT tanker and then Rafale fighters, which engaged in air policing and air defence operations in the Baltic countries. Poland, a country that heavily invests in its defence and that of Europe, was also chosen by French decision-makers to strengthen ties with its airmen by improving mutual understanding. This effort coincided with Pégase 2025, which took place just days before the meeting between President Emmanuel Macron and Polish Prime Minister Donald Tusk in Nancy. Finally, Croatia belongs to the Rafale community, and its air force continues to build up its fleet of the French twin-engine jet.
- Discourage bad intentions with a non-escalatory conventional deployment, by demonstrating, as was done during Pégase, the ability to support French elements pre-positioned in the Baltic states as part of the Lynx/eFP (enhanced forward presence) mission at a moment's notice.
- Demonstrate the latest FASF aircraft in action, under real-life operating conditions, to prove that they are agile, robust, reliable, and easy to operate daily. This effort focused in particular on the A330 MRTT Phénix and the A400M Atlas.

Very long-range raid

Pégase Grand Nord (Far North) began with a very long-range raid, including live firings of laser-guided bombs at a Swedish firing range. This ambitious operation required extensive preparation in close co-operation with foreign partners to obtain all the necessary authorisations for overflights of friendly countries by aircraft equipped with war-ready weapons.

For the first phase of Pégase 2025, the FASF had mobilised significant resources: an E-3F AWACS, three A330 MRTT Phénix tankers, one A400M Atlas airlifter, six Rafale B/C fighters (four two-seaters from Saint-Dizier and one single-seater and one two-seater from Mont-de-Marsan, all F4.1 standard), and three Mirage 2000D RMV strike fighters, which operated independently of the rest of the force. "On April 22, we conducted a long-distance raid from France," explained Colonel Clément Amagat, deputy operations officer for Pégase 2025. "Each aircraft departed from its home base, and the entire force,

Colonel Clément Amagat talks to a French Rafale pilot just after the detachment landed in Croatia

French Rafales and Polish Fighting Falcons flew advanced combat training missions during Pégase 2025 to hone their respective fighting skills. Contrary to what has been posted by other media, the Rafales did not simulate nuclear missions

> **“Everywhere, we received a fantastic welcome, which helped strengthen strong, friendly relations.”**

except the A400M, regrouped above the Bay of Somme before heading towards the North Sea. It was there that a Royal Air Force A330 MRTT refuelled our fighters in bomber configuration. Indeed, two of the Rafales from Saint-Dizier were each armed with four GBU-12 laser-guided bombs, two with live bomb bodies and two with inert bomb bodies, hence the need to obtain diplomatic clearances to fly over the countries concerned. They were heavier and dragged more than the unarmed Rafales, hence the need to call on the British Voyager to supplement our three Phénixes, one of which also refuelled our AWACS. The force then transited via Denmark, then via the south and east of Sweden, flying over the Baltic Sea before entering Swedish airspace defended by four Gripens armed with Meteor missiles. The raid was then reduced to a single Phénix, the AWACS, and the six Rafales. The two fighters from Mont-de-Marsan fulfilled the sweep mission ahead of the raid while their counterparts from Saint-Dizier assumed the striker function. Our two 30th Escadre de Chasse Rafales also had to protect our high-value assets, the AWACS and the last Phénix. The weather was marginal, but the two bombers managed to deliver a live GBU-12 each on the Lomben firing range, near the town of Kalix, with both targets illuminated by Swedish special forces. Direct hits were recorded. These were the first live weapons firings directly from France as part of a power projection training event. This long-distance operation is thus similar to the raid conducted in 2013 in Mali from Saint-Dizier. This is the result of great multinational co-operation with our British and Swedish friends. Two points that I would like to emphasise in this presentation: the AWACS

A Croatian Rafale EC and a French Rafale B sit on the ramp at Zagreb

Général Patrice Hugret, Commander of the Pégase 2025 mission. He flew Rafale Marine while detached to the French Navy and later commanded a Rafale squadron

directly retransmitted its L16 image to the Lyon Mont-Verdun command centre thanks to the Joint Range Extension system, while the Phénix, with General Hugret and me on board, acted as a flying command post."

At the end of this raid, the Rafales and the Phénix landed at the Luleå base, home to the F21 wing and its JAS-39C/D Gripen fighters. The three Mirage 2000Ds extended their route to Finland, where they continued their mission alongside the local F/A-18C/D Hornets without interacting with the rest of the Pégase participants. At the same time, the AWACS returned directly to Avord.

Multi-Axis Co-operation

Following this initial highlight, Pégase 2025 facilitated numerous interactions with multiple partners in the northern and eastern regions of Europe, as well as in the Balkans. "The flights continued at a particularly sustained pace throughout the mission," emphasised Amagat. "The following day, our Rafales fired two additional GBU-12s at Lomben for the benefit of Swedish forward air controllers. With and against the Gripens, advanced long-range and short-range combat scenarios were practised, making full use of their immense training area, including very low altitude/very high-speed flights at 300ft and up to 550kts. The Phénix and the A400M refuelled the Gripens, thus demonstrating full Franco-Swedish interoperability. To enhance the scenarios and vary the partners, our pilots also worked with Finnish F/A-18C/Ds. On Saturday, April 26, three of the Rafales from the 4th Escadre de Chasse returned to Saint-Dizier via Estonia, where they simulated ground attacks in co-operation with allied forward air controllers of the NATO multinational battalion. The other three Rafales and the A400M left Luleå for Poznań Air Base in Poland, bypassing the Russian enclave of Kaliningrad, while the Phénix landed at Poznań International Airport. In addition to missions with Polish F-16s, our Rafales trained with Royal Air Force Typhoons temporarily stationed in Malbork, Poland. On Tuesday, April 29, our Rafales carried out a mission as part of the NATO Neptune Strike exercise in the Mediterranean, directly from Poznań before landing in Zagreb. Finally, our interaction with our Croatian comrades was highly beneficial to both parties, marked by a joint flight on Wednesday, June 30, and the first in-flight refuelling of a Croatian Rafale by a Phénix on the same day. Everywhere, we received a fantastic welcome, which helped strengthen strong, friendly relations."

Complex missions

Pégase 2025 allowed Rafale crews to conduct integrated operations with Swedish JAS-39C/D Gripens, Polish F-16C/D Fighting Falcons, and Croatian Rafale EC/DCs. Captain Anthony, an EC 1/4 'Gascogne' pilot, agreed to describe some of the flights

French and Croatian aircrews pose at the end of their joint missions. The Croatian pilots have kept their helmets on to hide their faces.

A French WSO salutes while taxiing out for an air-combat training exercise.

SAUVETAGE
POUR LIBERER L'EQUIPAGE
1- BRISER LA GLACE
2- TIRER L'ANNEAU
4-IE

"Even though it is less powerful, the Gripen is ultimately quite comparable to the Rafale."

he took part in: "In Sweden, I participated in an Offensive Counter-Air mission during which the Rafales of our patrol played a swing role, simulating an attack on buildings and hangars using simulated AASM guided munitions. The Gripens and two additional Rafales escorted us. We shared data with them on the same L16 network at the BU2 standard, for Block Upgrade 2, the most advanced iteration of the Link 16. A huge area was reserved for us, the largest I have flown in since the beginning of my career. It is at least four times larger than TSA 43, the largest of the French air combat training areas, above the Massif Central. It is a mixed civil and military airspace, but with very little civilian traffic. Their air traffic controllers proved excellent at segregating civilian and military aircraft. Even though the Gripens and two other Rafales were conducting a sweep 20nm ahead of us, we also ensured our self-protection thanks to the Rafale's formidable air-to-air capabilities. To reduce our vulnerability, we descended to a low altitude for a high-speed, very low-altitude penetration. The many lakes were still frozen, and there was snow everywhere. A superb landscape! In front of us, eight Gripens representing the Red Air Force were trying to block our passage. My navigator and I constantly kept an eye on the tactical situation, a mix of L16 tracks and tracks from our own RBE2 AESA radar. Thanks to this, we avoided threats and delivered our weapons in a simulated manner."

Defending a NATO meeting

From Poznań, FASF airmen collaborated closely with their counterparts in the Polish Air Force, conducting particularly complex air combat missions that followed elaborate scenarios. "In Poland, I was engaged in a Defensive Counter-Air mission during which we had to defend a simulated NATO leaders' summit against an enemy raid aimed at disrupting, or even preventing it," Captain Anthony explained. "Two of our Rafales were engaged, including mine, with the Polish Air Force's Second-in-Command in the rear seat. The friendly Blue Air force consisted of eight F-16s and our two Rafales, while the aggressor party had six Red Air F-16s. To ensure the defence of the meeting, two Front Combat Air Patrols, each composed of four F-16s, were facing the enemy on two lanes [parallel tracks] West/East. At the same time, a Rear CAP with a Rafale was responsible for engaging any hostile leakers who might have managed to pass or bypass the defensive curtain of the Blue Air F-16s. My Rafale was kept at a distance to demonstrate the aircraft's capabilities to the Polish general while monitoring the progress of the fight via the L16. Unfortunately, the Rafales and the F-16s were not on the same L16 network because the Polish F-16s are still equipped with the earlier L16 Block Upgrade 1. Polish fighter controllers performed an excellent job of targeting by assigning each enemy aircraft to a friendly fighter, thereby avoiding overkills, i.e. the firing of several missiles at the same target by multiple aircraft. Equally importantly, they ensured that each hostile was targeted to guarantee that no leaker would manage to reach the NATO meeting. Polish pilots are very professional. They are accustomed to NATO-type exercises and operate in a manner very similar to ours. The Polish Mission Commander of the Blue Air Force led the fight as we would have done. This is very reassuring, and it demonstrates our ability to

At Poznań Air Base, A400Ms, F-16s, and Rafales were closely guarded by heavily armed Polish force-protection specialists

> ***"The F-16 is also an older-generation aircraft, with less nose authority than the Rafale, which means its pilot will be less comfortable at high angles of attack."***

Dogfights

In addition to complex, massive missions, one-on-one close-quarters combats were organised in Sweden and Poland to train pilots for all scenarios, including those where the aircraft would merge in a dogfight, after an inconclusive long-range engagement. For these flights, Rafale configurations were quickly adapted, with the 2,000-litre wing tanks being removed and smaller 1,250-litre drop tanks being installed under the central pylon.

Captain Anthony shared his impressions of these close-quarters combats against a Gripen, an F-16, and a Typhoon: "Even though it is less powerful, the Gripen is ultimately quite comparable to the Rafale," he said. "Like the Rafale, it is comfortable at low speeds due to its canard/delta wing aerodynamic formula, which is quite like that of the French aircraft. However, due to its lower engine thrust, it degrades its energy more quickly in combat. The F-16 is much more powerful than the Gripen. However, it is also an older-generation aircraft, as it has less nose authority than the Rafale, which means its pilot will be less comfortable at high angles of attack. He will therefore have more difficulty turning very short and pointing the nose of his aircraft towards his opponent for a gunshot. I also had the chance to do a dogfight against a Typhoon, but I came across a young pilot, and it quickly went very badly for him."

PEGASE 2025
GRAND NORD

Pegase Grand North patch

Croatian Air Force Rafale patch

carry out joint missions without any difficulty thanks to procedures shared by all."

With the Croatian Rafales

Croatia has acquired a total of 12 ex-FASF Rafales, comprising ten Rafale C single-seaters and two Rafale B two-seaters, which are now respectively designated Rafale EC and DC in Dassault Aviation's official export terminology. For Pégase 2025, the FASF had decided to deploy three of its Rafales to Croatia to strengthen the mutual relationship and participate in a joint air-to-air mission. The welcome given by the Croatian airmen to their French counterparts at the Zagreb base was particularly warm, with the crews of both nations taking the opportunity to strengthen the already close ties established in mainland France during the Croatian airmen's conversion onto the Rafale.

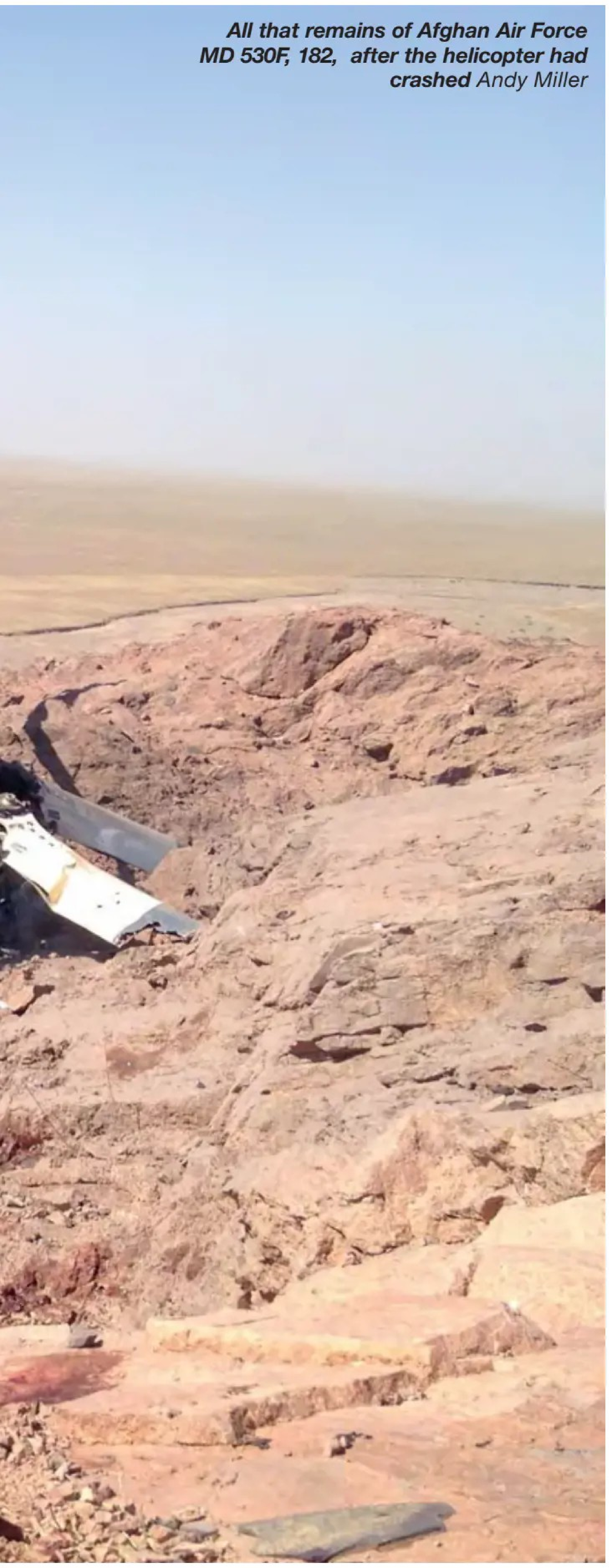
"We conducted a joint two-v-two mission, with two mixed patrols, each consisting of a Croatian single-seat Rafale EC and a French two-seat Rafale B," Captain Anthony explained. "As in Poland and Sweden, the briefing was face-to-face, which allowed us to clarify each other's intentions and needs, and to increase the fluidity of the mission. We were not part of the L16 network with our Croatian comrades, but the two French Rafales were in L16 formation with each other for security reasons during take-offs, positioning, and return phases. On the other hand, as we were playing against each other in mixed patrols, the L16 was cut off as soon as we entered combat. Although they are still in the process of appropriating the aircraft and ramping up their Rafale tactics, I think that our Croatian friends demonstrated excellent air-to-air tactical skills."

The Pégase 2025 mission once again demonstrated the maturity, flexibility, and power of the FASF's Rafale/Phénix/Atlas package. The ability to 'bounce back' extremely quickly from one base to another while conducting simulated combat operations was also proven, with the ACE concept validated from foreign military installations with a light logistical footprint. Few air forces in the world are capable of conducting operations like these at such a sustained pace, and it is thanks to the advanced expertise and professionalism of its entire personnel that the FASF can organise these deployments. **afm**

F-RBAS
APRON D →

This A400M, configured as a tanker with an underwing pod, was used to refuel Swedish Gripens

Afghan rescue mission



All that remains of Afghan Air Force MD 530F, 182, after the helicopter had crashed *Andy Miller*

On September 7, 2013, an Afghan Air Force MD 530F helicopter was destroyed by an IED. US forces rescued the seriously injured crew of two, and the operation was secured from the air by a Hungarian helicopter crew. We could not go into details then, but now, thanks to the surviving American pilot, Tamas Szorad shares a detailed picture of what happened

The commander of the stricken helicopter was Chief Warrant Officer 4 Andy Miller. Miller graduated with a bachelor's degree in 1991 and was introduced to helicopter flying privately. He joined the Army in 1995, completing the Warrant Officer Candidate School and then Flight School. He began his service in the OH-58D Kiowa Warrior, going on to become an instructor pilot. This, and combat experience in Iraq in 2008, enabled him to go on to train Afghan Air Force helicopter pilots from 2012.

Based at Shindand Air Base in Herat province, Afghanistan, the US Air Force Expeditionary Air Advisory Group trained Afghan pilots in Mi-17 helicopters with US and NATO allied instructors, including Hungarians. At the time of the accident, the sixth rotation of the Hungarian Defence Forces 86th Szolnok Helicopter Base's Air Advisory Team was serving in Shindand. The airbase also had a small support team flying the MD 530F helicopter. The F variant was optimized for hot environments and high altitudes, with a 650shp engine, longer rotor blades, and a larger tail rotor.

Each pilot in the MD 530 team was given the callsign Pamir after the high mountains of Central Asia, plus a number to indicate their assignment. Miller's callsign was Pamir 62. The Mi-17s flew with the call sign Jayhoon after the medieval Arabic name for the Amu-Darya River on Afghanistan's northern border.

An Afghan pilot and his American instructor

There were only 18 days left of CWO 4 Miller's nearly year-long tour when the accident happened. It was Saturday, September 7, 2013, which, in Islamic culture, is the first day of the working week following Friday's prayer day. Miller began the day at the team office. He checked the weather, read the NOTAM, picked up his M4 carbine and body armour, and joined two other American pilots. All three were training the two young Afghan pilots who could become the first helicopter instructors in the Afghan Air Force after completing their Mi-17 training. However, the Afghans had to gain additional flying time and experience on the MD 530 before retraining as instructors.

Lt Massoud Islamkhil was an Afghan pilot returning from leave as a married man. He hadn't been in a helicopter for two months but was prepared and ready to fly. Miller and Islamkhil picked up their flight gear in the hangar and headed to their MD 530, serial number 182.

On Western helicopters, the primary pilot seat is the right-hand one; on the MD 500 family, the left-hand seat is used for this purpose. Miller allowed the lieutenant to occupy the left seat because changing pilots and minimising ground time quickly seemed practical. They secured their bags and weapons in the cabin, carried out pre-flight checks, and boarded the helicopter. The American-Afghan crew took off at 0820hrs.

Practicing on the pinnacle

They first practiced approaching the taxiway parallel to the runway at Shindand Air Base, then continued the flight in the airspace around the base. From there, they flew to the Test Fire Area 5, located in a deserted area, where crews of Mi-17s, Apaches, and Blackhawks checked their onboard weapons. The MD 530 was piloted by Islamkhil, who enjoyed the task, the low-level flying, and the fact that no other aircraft was nearby. Then his instructor suggested precision landings on a pinnacle, starting with a lower pinnacle with a larger horizontal surface for landing. After he had performed the task, they reviewed the approach and landing techniques again and made further landings on the rock. Islamkhil performed flawlessly.

They could see another, larger pinnacle from the top of the cliff, which towered nearly a kilometre ahead and which Miller had landed on several times before. The instructor took over the helicopter and as he flew towards the pinnacle, he talked to the Afghan pilot about the importance of wind direction and the criteria for landing site selection. Upon arrival at the pinnacle, they flew a wide circle to allow the lieutenant to check the site. As usual, they flew without doors, so there was nothing to obstruct the view.

Everything was calm, nothing unusual was encountered, and after another circuit, they began their descent. Miller continued to explain the technique of the approach and that the focus should always be on the point where they would land the helicopter, and then gently lowered the MD 530 onto the pinnacle. He checked the right skid and the ground through the plexiglass chin bubble in front of the pedals.

A hidden IED

When he pushed the collective lever to the full down position with his left hand and the helicopter's mass was pressed against the skids, an explosion accompanied by a loud boom shook the aircraft. From left to right, an orange-red fireball penetrated the cockpit. Miller instinctively turned his head and lowered his chin. A mechanical noise followed the explosion, the helicopter bounced, and the stick shook wildly in the pilot's hand. Miller radioed 'Mayday', callsign and location, then yelled at the Afghan to abandon the aircraft. The helicopter pitched to the left but did not roll over on its side. Miller was able to pull himself out by grabbing the door frame. As his left leg refused to yield, he lifted himself and exited the helicopter with both hands clasped behind his knees. He sat on the ground, facing the tail section. As the aircraft became increasingly engulfed in flames, he dragged himself away. Seeing his leg at an unnatural angle, he was convinced he was going to lose the limb.

Looking to the other side, he saw Islamkhil, his left arm torn above the elbow and left leg missing below the knee. He rolled over to the American and together they slapped and smothered the flames burning his flight suit. With heat rising from the burning wreckage, Miller dragged himself and the Afghan pilot by his vest. They could get no further because there was a vertical drop.

Miller removed his helmet, ripped off his kneeboard, and angrily threw it into the fire. He sat up and tried not to look at his feet. He took a tourniquet from his vest pocket and placed it on his left thigh. His attention returned to Islamkhil, whose left humerus was showing, with muscle and tissue exposed. Miller removed the tourniquet from Islamkhil's vest and placed it on one of the lieutenant's thighs. The rest of the medical equipment was in the burning helicopter. Miller made a tourniquet from his recovery strap and clamped it around the Afghan pilot's other thigh.

Islamkhil, who spoke perfect English, struggled in pain. Miller tried to reassure him that help was on its way. He had no idea if anyone had picked up the distress call; it all happened so fast. He pulled out his PRC-112 survival radio and made another distress call. There was no response. He looked around and scanned the area. He was sure they had landed on an IED (Improvised Explosive Device) that worked on pressure. If it had been a cell phone-activated IED or an RPG (Rocket Propelled Grenade), the enemy who set it off would have turned up. The small arms would not have caused an explosion.

Shindand Tower eventually answered the repeated emergency calls. Miller again gave his callsign, their position, and that they were seriously injured. He was told a rescue was in progress. Islamkhil, meanwhile, was in an unconscious state, speaking in English and his native language, Dari, becoming quieter and less frequent.

Rescue gets underway

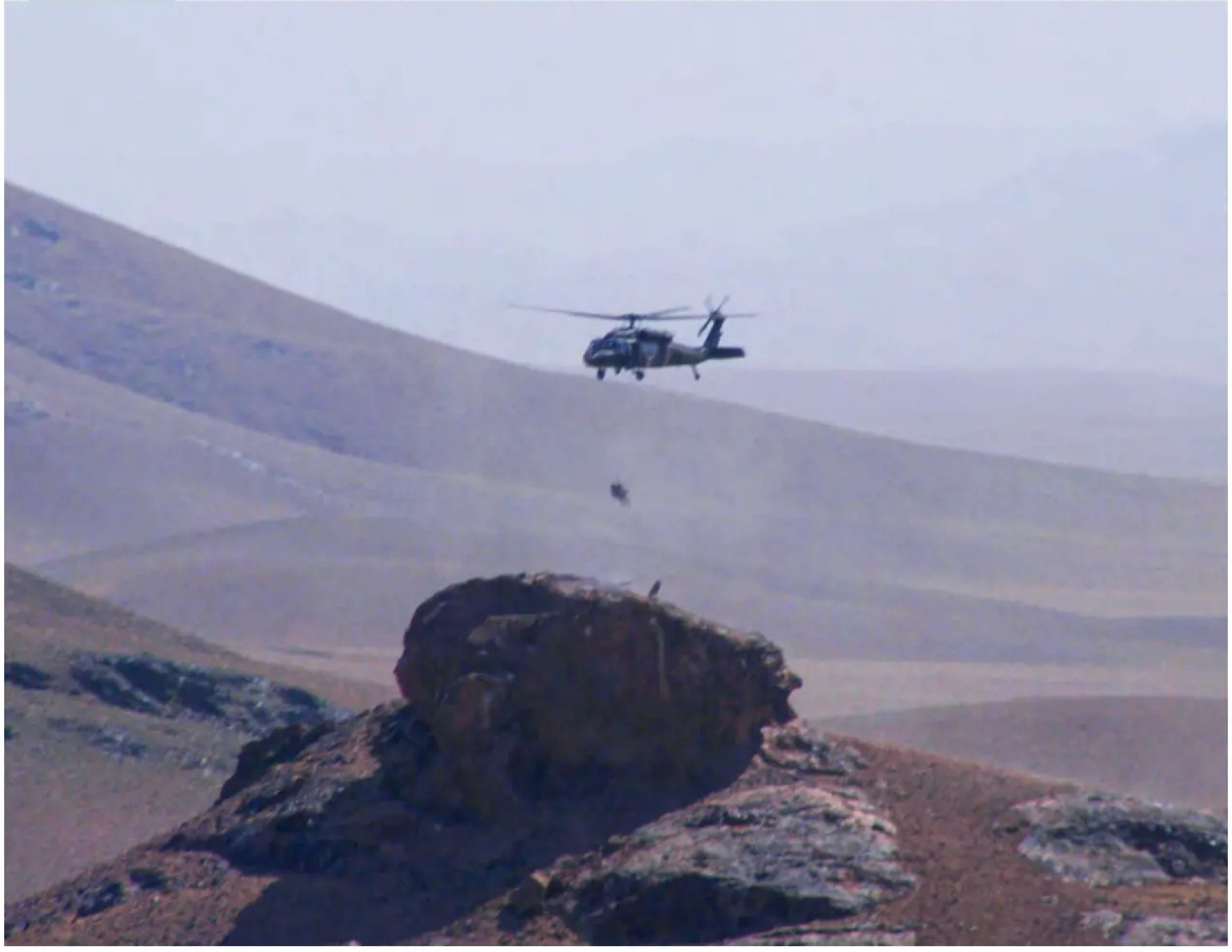
The first hope of survival was the Cessna 208, in which an American contractor was instructing his Afghan student. Bruce Robertson heard the distress call, saw the smoke, and flew the Cessna overhead. There wasn't much he could do, but by circling over the pinnacle, he provided moral support. The calm, firm answers from the Cessna pilot to the questions from Shindland were reassuring.

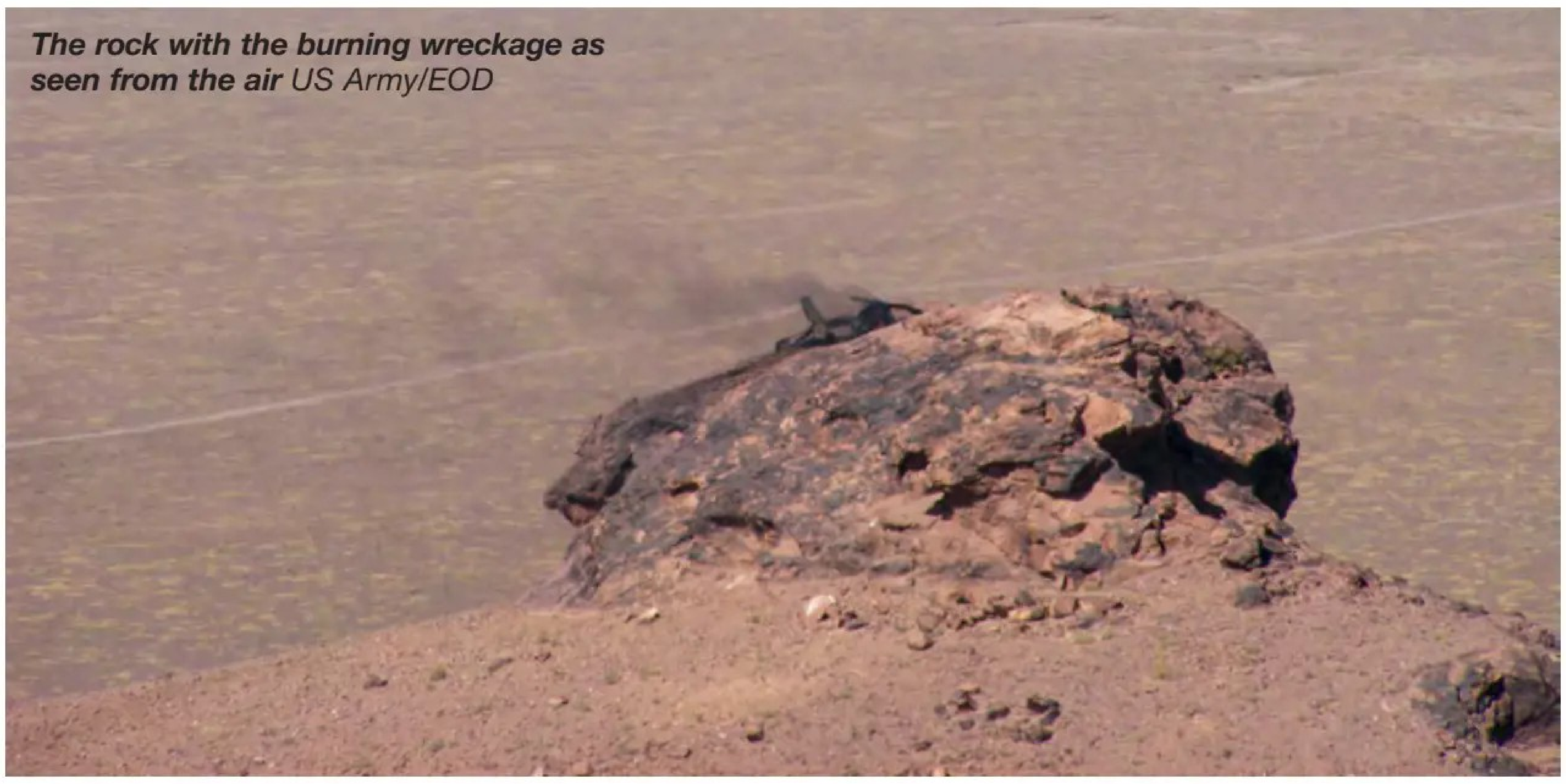
Perhaps Miller would have been more relaxed had he known that on the other side of the world, at Beale Air Force Base, California, SSgt Ashley Howard, the data link operator on duty, had taken the distress call. Beale AFB received information gathered by U-2s, RQ-4 Global Hawks, and other reconnaissance and intelligence systems operating over Afghanistan.

Unbeknown to Miller, there were two Mi-17s in Shindand about to take off. On board the lead aircraft, callsign Jayhoon11 were US crew, Capt Mary Clark and Lt Col Michael Kardoes, pilots, TSgt Keller, flight engineer, and TSgts Garcia and Heller, door gunners. They were pleased to not have to do a training mission. A qualified firefighter, MSgt Dan Parker and an Italian adviser would be transferred to another base to

An Afghan MD 530F helicopter Andy Miller

CWO 4 Miller and Lt Islamkhil prepare for what proved to be a fatal flight Lt Col Terry Griffith via Andy Miller


The Medevac helicopter lowers a stretcher onto the rock Hungarian Defence Force


The rock with the burning wreckage as seen from the air US Army/EOD

return to Shindand with firefighting equipment. The crew of Jayhoon 12 were Hungarian: Maj Tibor Balla and Capt Attila Dajka, pilots, CWO Péter Tóth, flight engineer, Capt Zoltán Kise, MSgt Zoltán Gecse, and CWO Zoltán Mátyás, who was completing his mandatory qualification following a ten-day break.

Both transport helicopters were armed with 7.62mm M240 machine guns. The Mi-17 and MD 530 teams were in daily contact and knew each other. Listening to the radio traffic between the tower and Miller, a quick decision was made aboard the lead aircraft: Capt Clark informed the controllers that the Jayhoons were ready for immediate departure and armed air support. Permission was granted, and they took off.

CWO 4 Andy Miller in the right seat of an MD 530F *Andy Miller*

A group photo with flag and plaque *Hungarian Defence Force*

On top of the pinnacle, about 10km from Shindand, Miller contemplated using his survival knife to smash and throw his iPhone, which contained a lot of personal data and photos, into the fire to avoid falling into enemy hands if captured. When he saw the approaching Mi-17s, he quickly abandoned this plan.

The helicopters were guided over the pinnacle by the Cessna pilot, saving precious minutes; he left the scene when the Jayhoons arrived. It was 0943hrs. Miller told Shindand that he could see the helicopters, but did not provide further details as he was not speaking on a secure frequency. The lead helicopter descended to low level, the escort climbed higher and set up a wide circle over the scene. The gunners could be seen moving their machine guns left and right in search of a target. Miller was reassured when one of the Hungarian gunners waved and nodded. After a few sweeps, the lead plane descended to the foot of the pinnacle, hovered for a moment at three metres, and then moved on.

Comrades arrive

Miller heard someone repeating his name. The right door gunner, TSgt Matt Garcia, had jumped out of the lead helicopter and climbed up the cliff. Flight engineer Keller took over his machine gun. Garcia rushed to Miller, checked his tourniquet, gave him a drink, and reassured him. He checked the Afghan pilot, who had become quiet, and put another tourniquet over the makeshift one.

The small weapon's ammunition in the still-burning wreckage began to explode, so Garcia pulled Miller behind a rock. He shielded him with his body from the rotor wash as the lead helicopter approached the rock for a quick hover. This time, it was Sgt Parker, who, besides his firefighting qualifications, had medical training and spoke some Dari. Parker checked Islamkhil's condition and, to keep him conscious, asked his name in English and then in Dari. The reply was quiet and weak.

Miller began to weaken from the blood loss and shock, and frequently asked on his radio about the evacuation. By this time, the UH-60 Medevac helicopters and an AH-64 Apache helicopter providing cover were approaching. The Missouri National Guard's Task Force Nightmare attack helicopter was on a functional check flight when Shindand controllers requested escort and cover for Medevac Blackhawks. The Hungarian personnel in Jayhoon 12 said that the rescue helicopters could not yet see the scene, so Jayhoon 11 assisted the Blackhawk pilots.

The increasingly weak Miller watched the helicopters approach, and Garcia and Parker talking to soldiers from the Georgia National Guard's Task Force Granite. They were securing the base at Shindand and had arrived at the pinnacle in their MRAP vehicle to put a security ring around it and prevent an attack.

Presenting the award to the Hungarian crew supporting the rescue *Hungarian Defence Force*

Garcia took a pen flare from Miller's vest to signal to the Medevac helicopters. The first Blackhawk hovered over the pinnacle and winched a medic and a stretcher down. Garcia and Parker quickly briefed the medic, Lt Tom Easter, who first attended to the critically injured Islamkhil and prepared him for transport. As soon as the Afghan pilot was in the Medevac helicopter, it immediately headed for Shindand. Miller, who was secured in great pain on another stretcher, was winched aboard another Blackhawk. SSgt Andrew Neil pulled the stretcher into the aircraft and gave Miller a shot of Fentanyl. The second aircraft left the scene at 1031hrs and landed at the Role 2 field hospital at Shindand.

Parker and Garcia looked around to ensure no classified material was left behind, then handed the site over to the Georgia Guardsmen and left the pinnacle by helicopter. While searching the area, the Explosive Ordnance Disposal (EOD) squad found another IED with a pressure plate. Since the site was off the road, the enemy must have observed the helicopters practicing their landings on top of the pinnacle and placed an IED on it.

Heading home

Miller's injured left leg was fixed in the field hospital. Long screws were drilled into the broken bone and fixed to a frame around the leg, holding the limb in position. The wound was closed with a vacuum dressing to prevent infection, and the burn on the his neck caused by the fire that had spread through the cockpit was treated. The next day, he was evacuated from Shindand to Bagram. The pilot fondly remembers his comrades lining up behind the ramp of the C-130 to bid him farewell.

In Bagram, he underwent excruciating treatment and preparation to be ferried to Europe the next day. He was flown in a C-17 transport aircraft to Ramstein, Germany, and then by ambulance bus to Landstuhl, the US Army Regional Medical Centre. He spent four days in Landstuhl and, while receiving the care he needed, was given the choice of which hospital in the US to continue his treatment. He chose a hospital in Georgia because of its good orthopaedic surgery, and proximity to his home in Alabama.

Six days after his accident, he was in a C-17 again, bound for Andrews Air Force Base, Washington, DC. The next day, a C-130 flight awaited him and he was taken by ambulance to the hospital of his choice, where he underwent a series of surgeries. There, he learned that Lt Islamkhil had passed away. The Americans had treated him at the Shindand field hospital then, according to protocol, handed him over to the Afghans. Unfortunately, his wounds became infected.

Miller was able to return home to his family on December 12. It had been 97 days since his accident, and he had undergone 12 surgeries. In April 2014, he regained his medical qualification and could fly again – he was assigned to a military air rescue unit as a UH-72 Lakota pilot.

With no opportunity for promotion, he ended his 20-year military career the following year. His retirement ceremony took place on April 24, 2015, at Fort Rucker, in the Museum of Army Aviation, where he received his commission in 1995 and was pinned with the pilot's wing on his uniform a year later.

As a civilian, Andy Miller continues to fly rotary-wing aircraft. After his discharge, he worked for Bell Helicopter as a Bell 429 instructor. In 2017, he moved with his family to another state and took a job in a civil air ambulance as a helicopter pilot. After another move, he stayed with the air ambulance company.

In addition to the comrade's recognition, the Hungarian assistance in providing air cover for the site is commemorated by a plaque in the museum of the helicopter base at Szolnok and a flag was flown on board an MD 530 over Afghanistan on September 22, 2013.**afm**

American and Hungarian air and ground crew with an Afghan Mi-17 *USAF*

A large aircraft, such as the A400, looks even more impressive when providing a huge topside pass
All photos Ben Stanley Hall

French patrolling old Orléans

Ben Stanley Hall visited the pretty Loire Valley to sample the French Air and Space Force's major airshow at Base Aérienne 123 Orléans – Bricy Air Base

Each year, the French Air and Space Force (FASF) hosts an airshow at one of its airbases, organised by the Fondation des Œuvres Sociales de l'Air (FOSA). FOSA acts in a similar way to the Royal Air Force Benevolent Fund, and the air meetings they help organise are a mainstay of their fundraising activities.

After a break last year, due to the FASF's 90th anniversary celebrations at Versailles, FOSA once again took control of the FASF air meeting at Base Aérienne (BA)123 Orléans – Bricy Air Base on May 24-25.

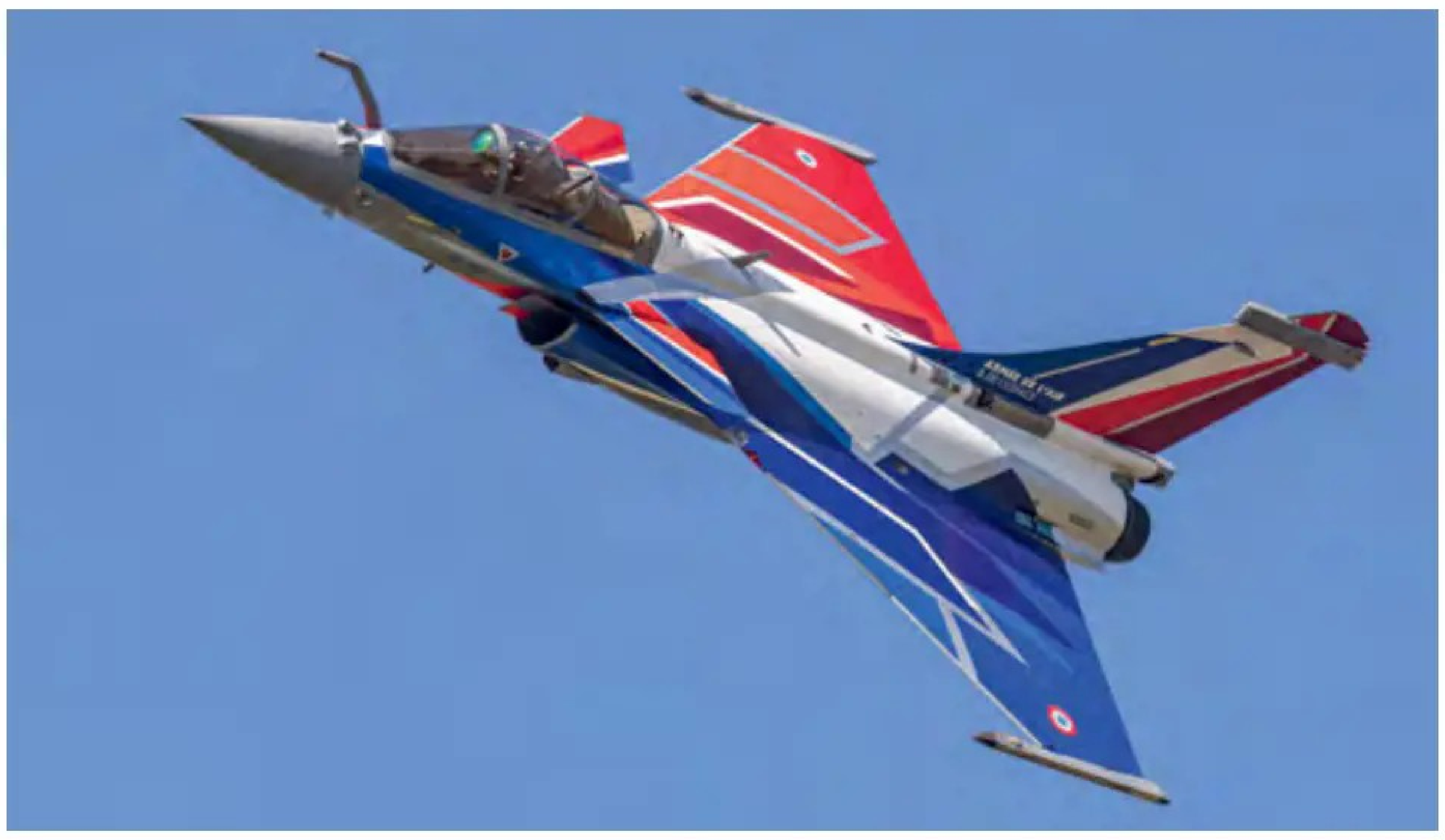
Tickets went on sale from February 1, with standard tickets priced at around €20 per day for the weekend show. Also on offer were two-, three- or four-day spotter packages, with a closer position and food provided, on Friday and Monday, and an enclosure at the crowd centre on the weekend show days. The cost for the four-day package, which I chose, equated to £114.

On Saturday and Sunday, our spotter's tickets granted us early access to the showground. We arrived at 6am and after being bussed to the entrance of the showground, we were permitted in small groups to walk the flightline, filled with all the flying participants for the weekend.

The static display featured no less than six based A400s, a pair of Mirage 2000s, one 2000D and a 2000-5F, as well as a multirole-configured Rafale B.

The Caracal inserting special forces for their extraction mission during its demo, kicking up the freshly mowed grass

Vautour Bravo was a welcome addition, continuing a long and proud tradition of French pairs displays. While not as impactful as displays from past teams, seeing two Rafales together is special



The colourful Rafale Solo Demo jet, 116/'4-IU', presents its beautiful colour scheme during its arching topside pass

Other notable static aircraft were a pair of specially marked AS555 Fennecs, a pair of unmarked Alpha Jet Es, which are allegedly used for training Ukrainian pilots who will fly the newly delivered Mirage 2000-5Fs, an Airbus A330MRTT, and a rare Beechcraft King Air 350ER/ALSR VADOR .

The RAF Falcons opened the flying display, jumping from their Dornier Do-228. A feature of the flying display was mixed pairs of flypasts before each element broke into its own routines. This included a Dassault MD 312 Flament flying alongside its modern-day equivalent, the FASF SOCATA TBM-700. There was also one representing training fleets, with a CM-170R Magister flying in close company with a beautiful SNJ-5 Texan, and de Havilland Vampire with a Lockheed T-33 (CT-133) Silver Star.

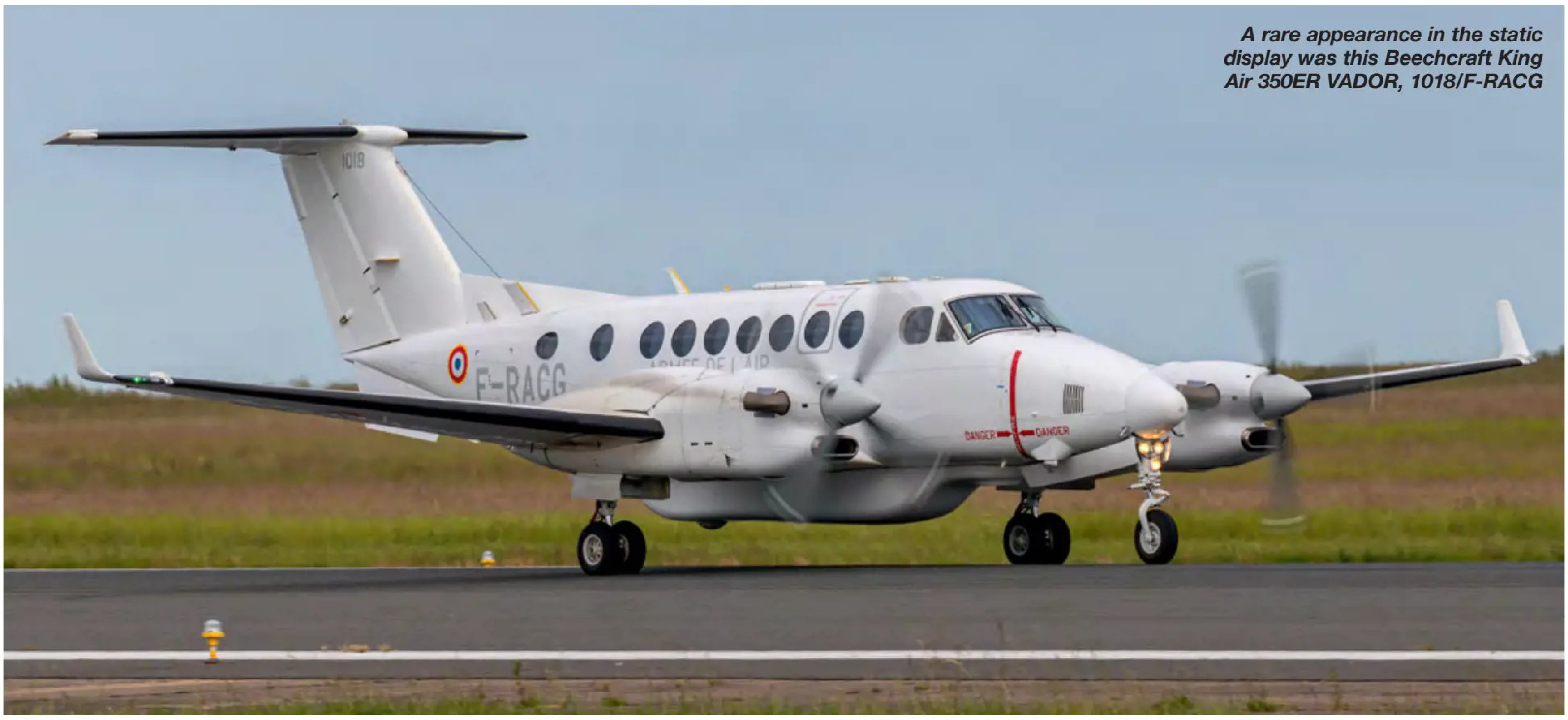
The international military contribution to the flying display, besides the RAF Falcons, was the C.16 Tifón from the Spanish Air Force, which was a loud and punchy display, and the slick and smooth Swedish Air Force Gripen C.

It was the home team that was the focus of the display though. The L'Équipe de voltige de l'Armée de l'air provided two displays, a single-ship display with an Extra 330SC, and a very rare three-ship display which consisted of a pair of 330SCs and the rarely seen two-seat 330LX. The three-ship display in particular was a sight to behold, much more dynamic than the many Extra displays seen previously. The Rafale Solo Display, as expected, was excellent, right up there with the best of the European demo teams. The strikingly painted Rafale C might be new, but its pilot Captain Jean-Brice 'Mimouss' Millett returns from last year. The other core 'Ambassadeur' was the Orleans-based A400 demo, which, at first viewing, was an incredible display, lots of tight turns, high wingovers, and the lost art of a touch-and-go.

Also on show were a pair of tactical displays, Vautour Bravo and its pair of Rafale Bs, and Mustang X-ray with its pair of Pilatus PC-21s. Both displays demonstrated what both types can and do perform on their respective primary missions. While less dynamic and tight than the previous French pairs' displays, they were both welcome additions to the flying display. The final French military participant was an excellent special forces demonstration from the EC725M Caracal. It started with a fast rope insertion of special forces to recover a downed pilot. After some general handling, the Caracal returned to collect the soldiers and pilot in a unique fast extraction where the passengers are flown away dangling from a long rope.

The based A400s featured several times in the display, including as the jump-ship for the Phénix Parachute Display Team, a pair performing a mock air refuelling demonstration, and as part of the finale. In theory, it should have been exciting but the reality was that it was a little disappointing and disjointed. First, high flypasts from a Falcon 900LX and E-3F Sentry at great intervals were followed, very slowly, by a C-130H led by another A400 arriving from the right sometime after the flypasts. The C-130H performed a static-line jump, complete with round parachutes.

The show was very well organised, enjoyable, and well worth the visit. Next year's iteration will be held at BA 709 Cognac-Châteaubernard over the weekend of May 23-24, 2026. **afm**



A rare appearance in the static display was this Beechcraft King Air 350ER VADOR, 1018/F-RACG

A century of French naval aviation

French Naval Aviation marked the centennial anniversary of its Hyères Naval Air Station with a commemorative event this spring. **Babak Taghvaee** reports

44
MARINE
MARINE NATIONALE

Established in 1925, Hyères Naval Air Station serves as the principal Mediterranean base for French Naval Aviation (Aeronavale) and has done so since the early 1990s. It currently hosts the majority of French Navy's rotary-wing assets.

The base is home to 44 helicopters and seven unmanned aerial vehicles (UAVs), operated by three operational flotillas – 31F, 35F, and 36F. During the two-day celebration on May 31 and June 1, nine helicopters and two UAVs from Hyères NAS participated in a large-scale static and aerial display that featured a total of 56 aircraft.

Throughout the event, the French Navy conducted aerial demonstrations showcasing a broad spectrum of aviation assets. These ranged from the SA365 Dauphin II helicopters to the carrier-capable Rafale M multirole fighter, which executed tactical manoeuvres in front of an audience exceeding 30,000 visitors.

Notably, the event featured the first public aerobatic performance by the Alpha Jet

F-HTHC
MARINE

The 32F has two of its eight H160Bs on deployment at NAS Hyeres including this one (1031) which was seen performing two search and rescue missions out of the base on May 30 and 31

Three AS565SAs of 36F performed formation landing at the air base. The anti-drone system of the French Air and Space Force which protected the airshow from overflying drones can be seen

One of the four Rafale Ms of the 17F which took part in the airshow. Two were dedicated to display flights while two others, including the spare for the demo team, were on static display *All photos, Babak Taghvaee*

An overview of the airshow area on the evening of May 31, showing 30 out of 56 aircraft and helicopters which took part in the event

E aircraft of the Patrouille de France – France's premier military aerobatic display team – since the non-fatal mid-air collision involving two of its aircraft on March 25, 2025.

A highlight of the celebration was the formation flights and combined displays of vintage and legacy naval aircraft. Among them were the last airworthy examples of the Sud-Est SE.3130 Alouette II helicopter, formerly in French naval service, and the Breguet Br.1050 Alizé anti-submarine warfare (ASW) aircraft which conducted demonstration flights during the dynamic five-hour aerial segment on both days.

Base on display

The based units are 31F, which operates 13 NH90-NFH Caiman helicopters configured primarily for anti-submarine warfare (ASW); 35F, which maintains a mixed fleet comprising five SA365N, three SA365F1, one SA365SP, and six SA365N3 Dauphin variants dedicated to maritime surveillance and search and rescue (SAR) missions; and 36F, which is equipped with one AS565UA Panther, 15 AS565SA Panther utility helicopters, and seven Schiebel Camcopter S-100 unmanned aerial vehicles (UAVs), often employed in reconnaissance and littoral security operations. According to Sea Captain Paul Zanassi, commanding officer of NAS Hyères, 15 of the base's 44 helicopters were engaged in operational missions abroad, embarked on various vessels of the French Navy across international waters.

The airshow featured seven of the station's helicopters in both static and dynamic display roles, accompanied by seven visiting aircraft from allied services. These included a H160B of the Aéronautique Navale, a Tiger HAD attack helicopter, two NH90-TTH Caiman utility helicopters, and a SA342M Gazelle anti-tank helicopter from the French Army Light Aviation (ALAT), in addition to an Italian Navy NH90-NFH and a Royal Netherlands Air Force NH90-NFH.

Among the operational highlights of the event was a tactical demonstration by 31F using one of its NH90-NFH Caimans. This airframe, like many of its squadron counterparts in recent months, was deployed in complete Anti-Submarine Warfare (ASW) configuration. Complementing this, 35F contributed with two aircraft: a SA365N (24) finished in the dark grey 'Pedro' livery typical of carrier-based SAR operations, and a SA365N3 (772) painted in a two-tone light grey and blue colour scheme. Meanwhile, 36F fielded three AS565SA Panthers (505, 507, and 524), all of which participated in co-ordinated tactical flight routines.

The NH90-NFH and Panther helicopters demonstrated an array of operational manoeuvres, showcasing the dynamic agility of the Aéronautique Navale's rotorcraft. In parallel, Dauphin variants from 35F engaged in a tactical display involving fast-rope insertion by personnel from the Groupe d'intervention de la Gendarmerie nationale (GIGN), France's elite national counter-terrorism unit, offering a vivid portrayal of joint-force interoperability in maritime security operations. Additionally, one of 32F's Airbus H160B helicopters (1008), currently deployed at NAS Hyères, executed a flight demonstration following a similar tactical profile to that of the base's NH90s and Panthers, highlighting the platform's emerging role in the French Navy's next-generation SAR capabilities.

Plenty of vintage

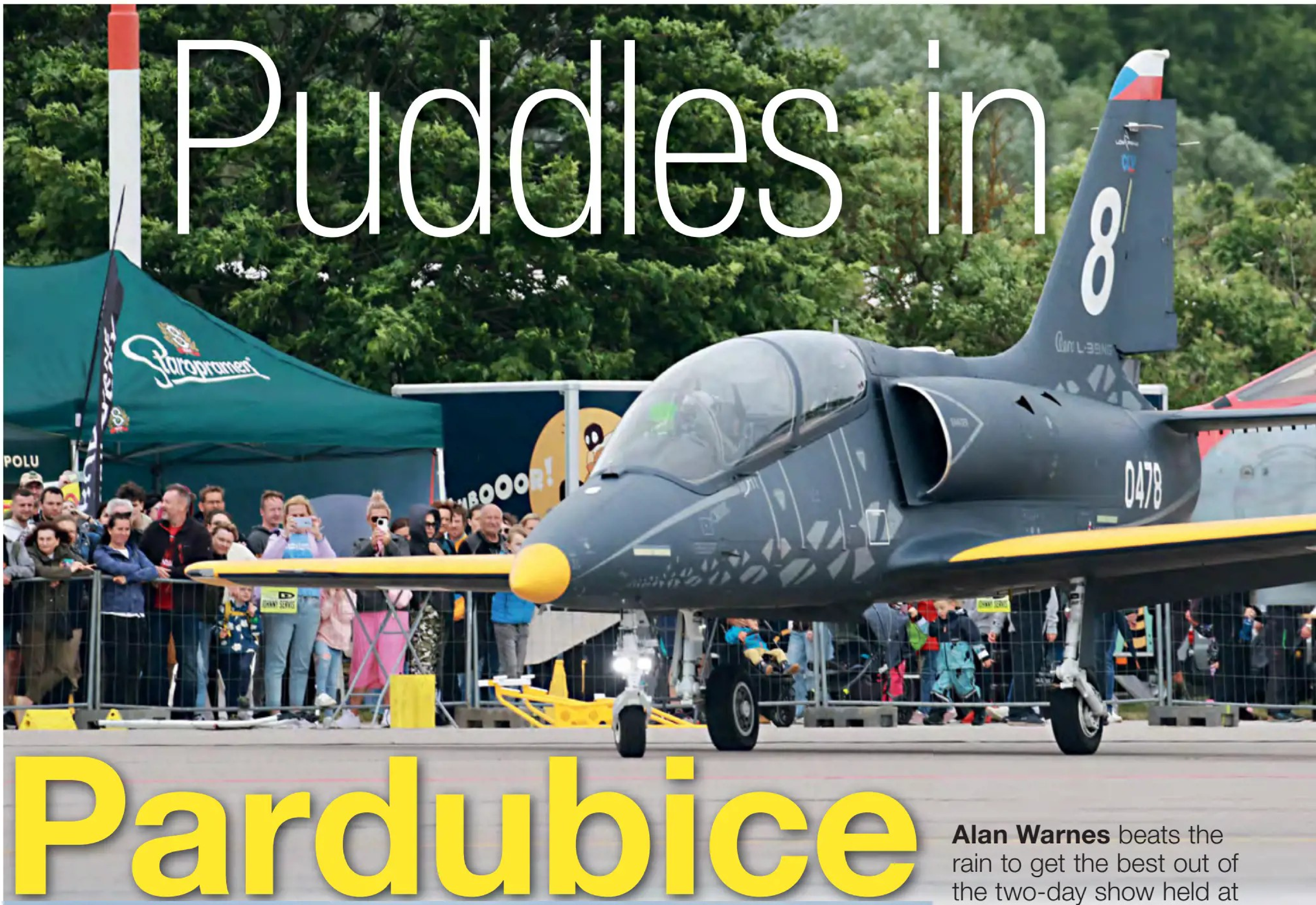
A significant highlight was the participation of five former French Navy fixed-wing aircraft and two vintage helicopters, all currently preserved by museums, associations, or private collectors. Frigate Captain Cyril Chabrier, director of the airshow, emphasised their symbolic and operational relevance. He said: "We have a historic flight, just like the Brits… The Falcon 10, about to retire, the Rafale, which is the pinnacle of our Navy, and classic wings like the Alizé, Paris, Morane Alcyon, Alouette 2 and 3. Most – not to say all – pilots in this historic flight are former French Navy pilots. We kept the same mindset, so that's why we can fly together in full safety."

Commander Zanassi recalled his technical experience with the Br.1050 Alizé (59/F-AZYI), offering an insight into the dedication required to sustain legacy aircraft: "I remember it because it took me a lot of hours of maintenance. It kept having engine problems. The engine [Rolls-Royce RDa.7 Dart Mk 21] has since been changed. It's okay. I had the opportunity to even fly with it when it was in service."

The airshow concluded at 1900hrs on the evening of June 1, ending of one of the most dynamic and historically rich airshows organised by the Aéronautique Navale in recent years. **afm**

A SA365N Dauphin in Pedro colours (48) and a SA365N3 Dauphin II (772) from 35F performing a tactical display

Puddles in Pardubice



Alan Warnes beats the rain to get the best out of the two-day show held at the Czech Air Force's pilot training facility

The CLV's director of operations, Jaroslav Spacek, hover-taxis his Enstrom 480 out to the runway with a Zlin 142 at the start of its flying routines

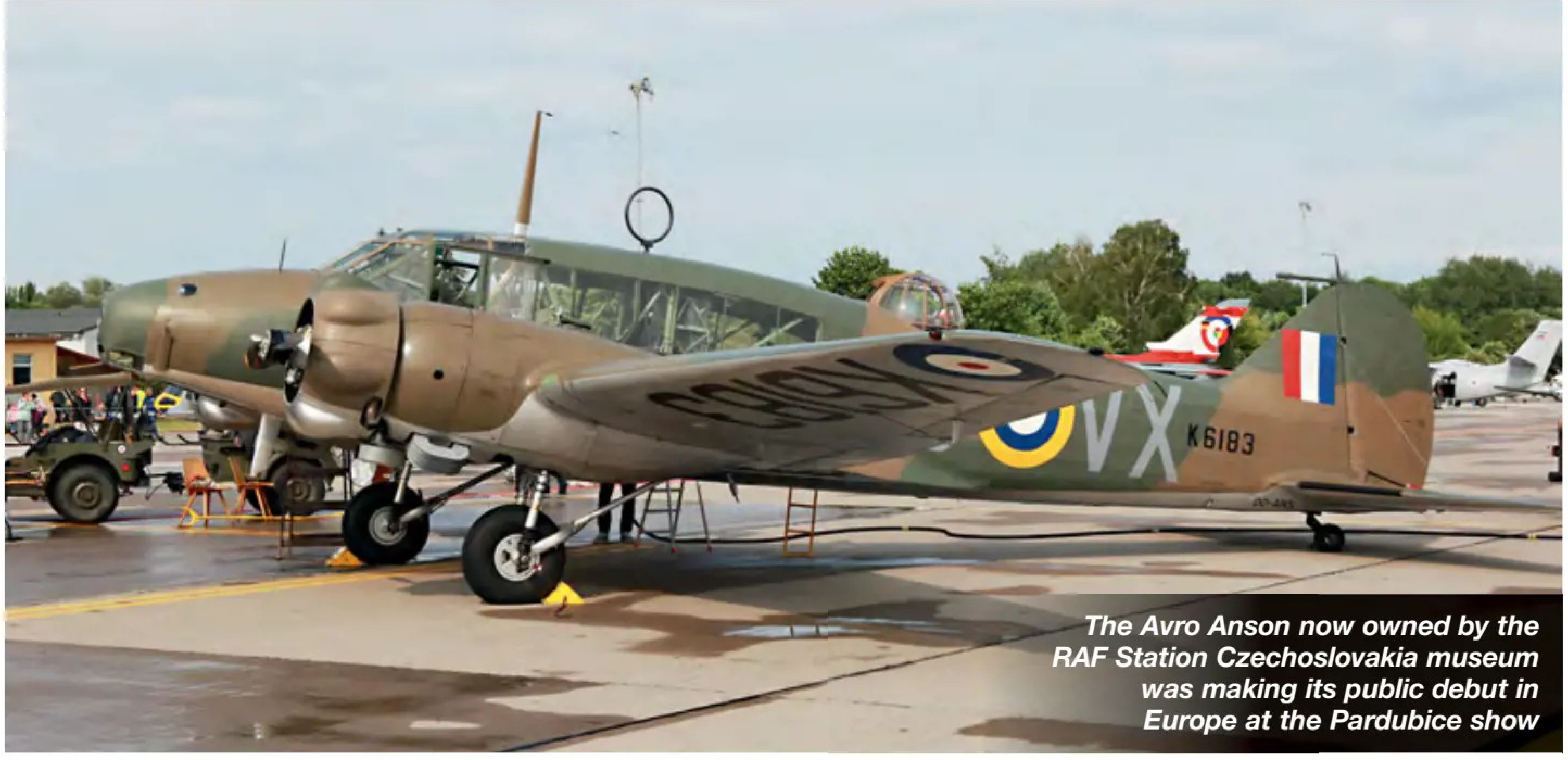
Bad weather hampered this year's airshow on June 6-7, particularly on the Saturday when the rain came lashing down for long periods. Fortunately, Sunday was much better, but still suffered from cloudy conditions, drizzle and a tremendous storm in the afternoon. However, the Czechs are a hardy bunch, so it didn't really deter them from enjoying a mixture of warbirds and military aircraft. The entrance fee of 200kc (approximately £7 per car) was good value for money, allowing the public an opportunity to see what goes on at the facility, which was hosting its 33rd airshow.

Warbirds

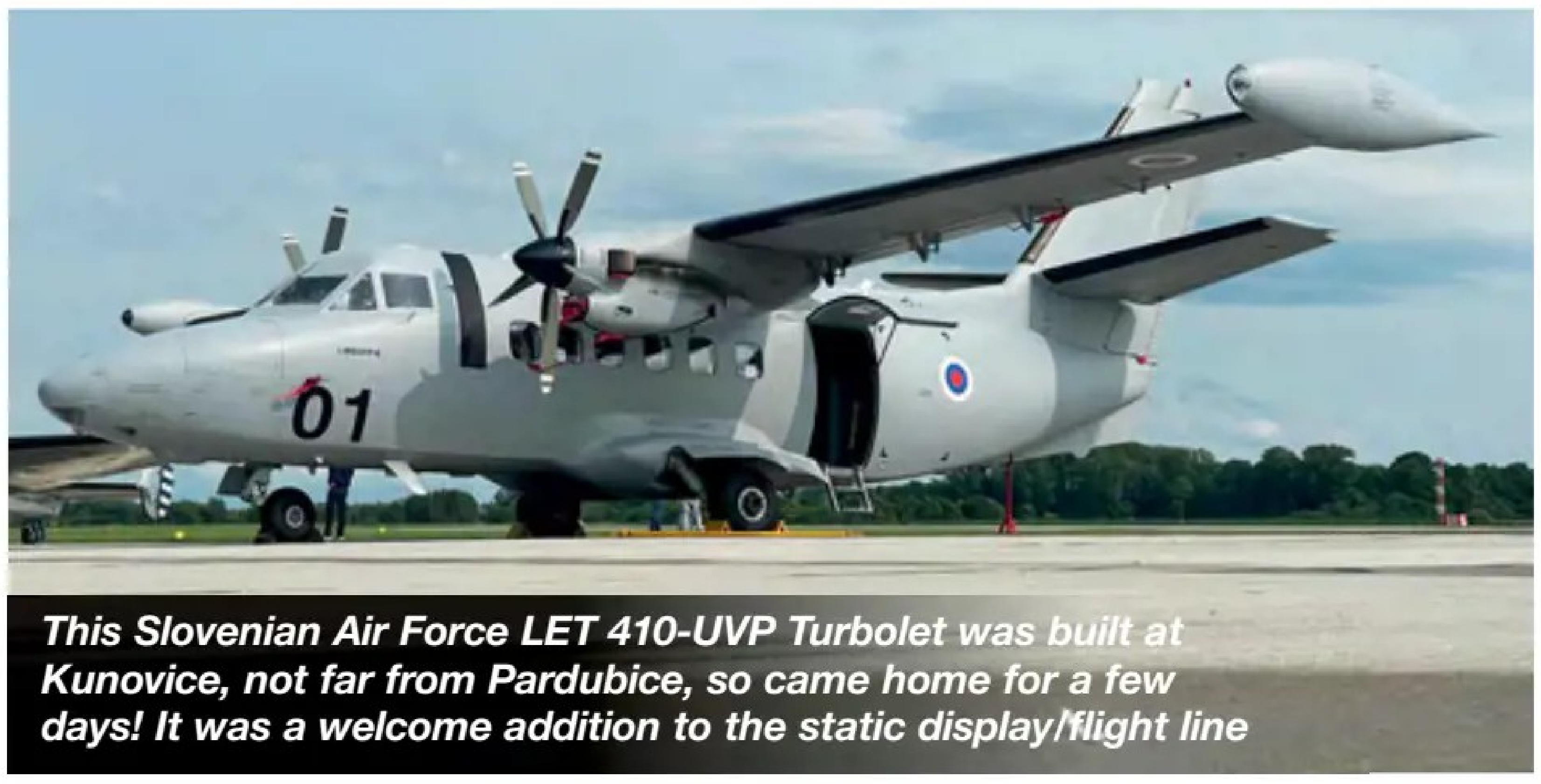
I'm not really a warbird fanatic, but I can recognise a rare sight and enjoy the atmosphere and sounds of an era gone by. The appearance of the world's only flying Anson Mk 1 certainly comes into that category. It is now based in Czechia after being acquired by the RAF Station Czechoslovakia flying museum at Podhorany, just 18 miles (28kms) away from Pardubice. This World War II veteran, MH120, is painted in the colours of K6183 and coded B-VX; it flew with the RAF's 206 Squadron. The Anson had been delighting airshow goers in New Zealand for a decade or so until it was put up for sale in early 2023 for around US$1.9 million. In April, it was shipped to Belgium where subsequently it was re-assembled and a day after making its first flight from Brasschaat on June 1, it was delivered to its new home. Certainly, a nice sight and beautifully restored, its premier flying display was delayed half an hour until a large storm had gone by and fortunately the sun came out.

The presence of the Anson Mk 1 made up for the disappointment of the replica Messerschmitt Me 262 that was billed to appear but didn't make it because of an oil leak. There were plenty of other veteran aircraft to marvel at, and the public could certainly get up close with the flight line situated right next to the crowd. The Flying Bulls aerial display team was present with its B-25J Mitchell, P-38 Lightning, F4U-4 Corsair, P-51D Mustang and T-28D Trojan and, not too surprisingly, caught the crowd's attention as they were taxied out to fly in their 20-minute slot. Wow! The sound of those radial engines was magnificent, as was the Classic Formation team's C-47 Dakota and three Beechcraft 18s some ten minutes later.

CLV, responsible for the flying training of Czech Air Force pilots, has received its first two Aero L-39NGs to replace the ageing L-39Cs. The first pilot training course has started and could eventually lead the pilot to the F-35A, which the Czech Air force will start receiving by the end of this decade *All photos, author*



The Avro Anson now owned by the RAF Station Czechoslovakia museum was making its public debut in Europe at the Pardubice show



This Slovenian Air Force LET 410-UVP Turbolet was built at Kunovice, not far from Pardubice, so came home for a few days! It was a welcome addition to the static display/flight line

Residents

Pardubice airport is the home to what is effectively the Czech Air Force flying training centre – Centrum Leteckeho Vycviku (CLV) – owned by LOM Praha. The company operates a mix of Enstrom 480s and Mi-17 *Hip* helicopters, while the fixed-wing syllabus is covered by Zlin 142 CAF, LET 410 and L-39C aircraft that are being progressively replaced by L-39NGs. Meanwhile, the strange-looking Eurostar EV97 that ensures instructors can top up their currency flying appeared in the static display.

CLV took delivery of two L-39NGs 0477/'7' and 0478/'8' in February and they are already being used for pilot training, although the author saw '7' flying from Aero Vodochody in the days leading up to the show. The next pair should be delivered in August, which will eventually lead to the retirement of the elderly Albatros aircraft, now struggling with airworthiness. CLV flew three aircraft in the display, the L-39NG was making its public display debut while CLV's director of operations, Jaroslav Spacek, flew an Enstrom 480, taxiing it out alongside a Zlin 142 CAF. All three put on some impressive aerobatic displays.

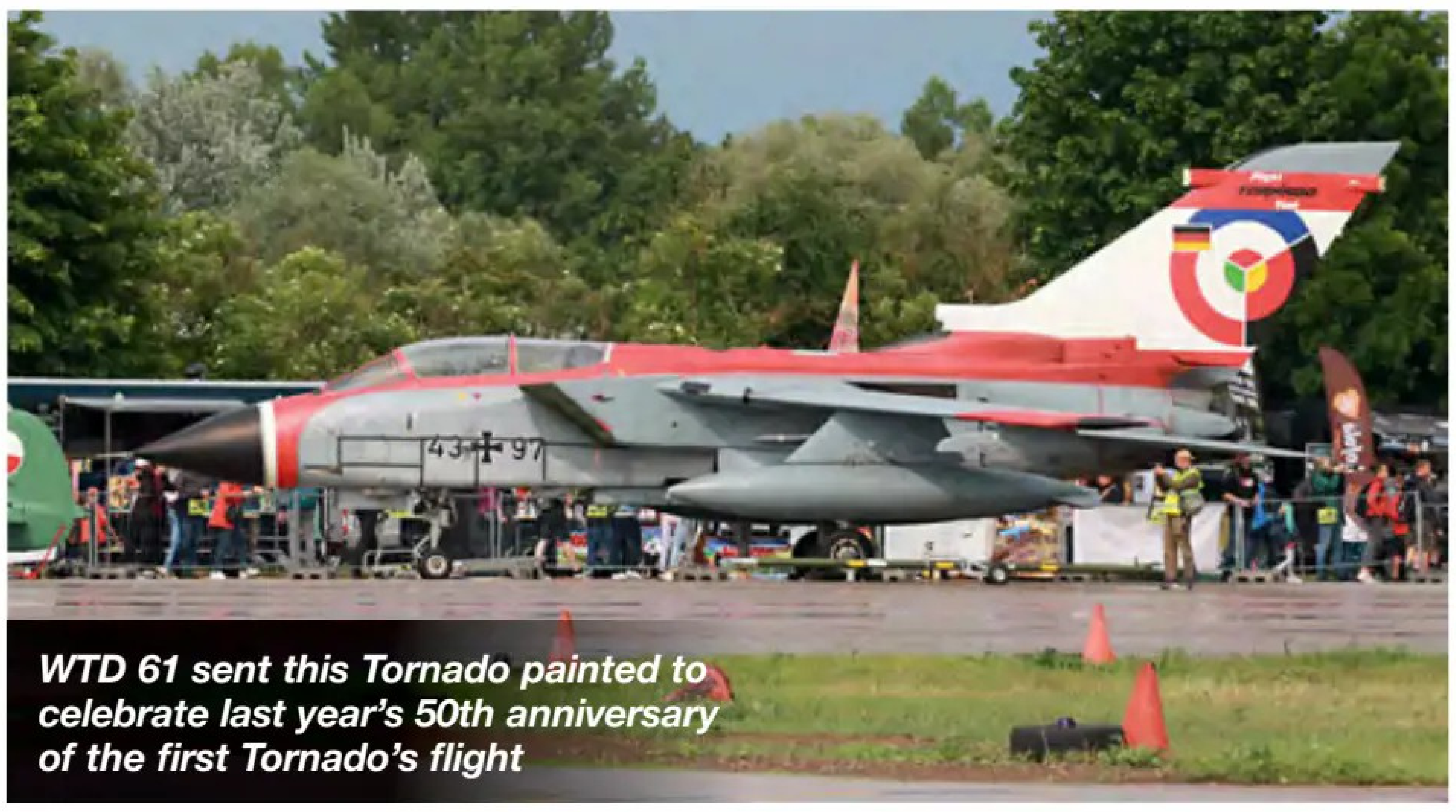
The public-backed company always puts on a static display at the opposite end of the ramp to the flight line, and that this year included a Enstrom 480B, Eurostar EV97, Mi-17, Zlin 142 CAF and a retired Mi-2, There was also a L-39ZA that was painted in special marks in 2018 to celebrate the 50th anniversary of the L-39's first flight, but was withdrawn from use in 2019. It will eventually become an exhibit in a Prague museum. Close by was Czech Air Force L-159 '6064' with a specially marked tail, but this time it was showing off the 25th anniversary tail marks on the other side that we hadn't seen at the Caslav show (see 'Caslav show report', July p92-93). The jet was being displayed by 213 Vycvikova Letka (Training Squadron).

Visitors

The Czech Air Force presented a flying display, with a couple of Gripens making several noisy fly-bys, while an Airbus C295W played its part, as did the specially marked Gripen being put through its paces by new display pilot, Captain Jan Ratz. Unfortunately, the weather was lousy during their routines although that wouldn't have put the public off enjoying them. The final Czech Air Force participant was a W3A Sokol in the late afternoon, with the crew from Plzen-Line putting the helicopter through an extremely energetic display, illustrating how manoeuvrable it must be to pick up the injured, often in tight, restricted places.

Three foreign aircraft sat in the flight line, and strictly could be described as a static display too, as two of them didn't fly. The Bundeswehr's WTD (Technical and Airworthiness Center for Aircraft) 61 unit based at Manching near Munich sent its specially marked Tornado 43+97 celebrating the 50th anniversary last year of the Tornado's first flight. The unit is tasked to test and evaluate military aircraft and airborne weapons systems of the German Armed Forces. Being parked next to the fence line, the crew interacted with the crowd as they stopped to look.

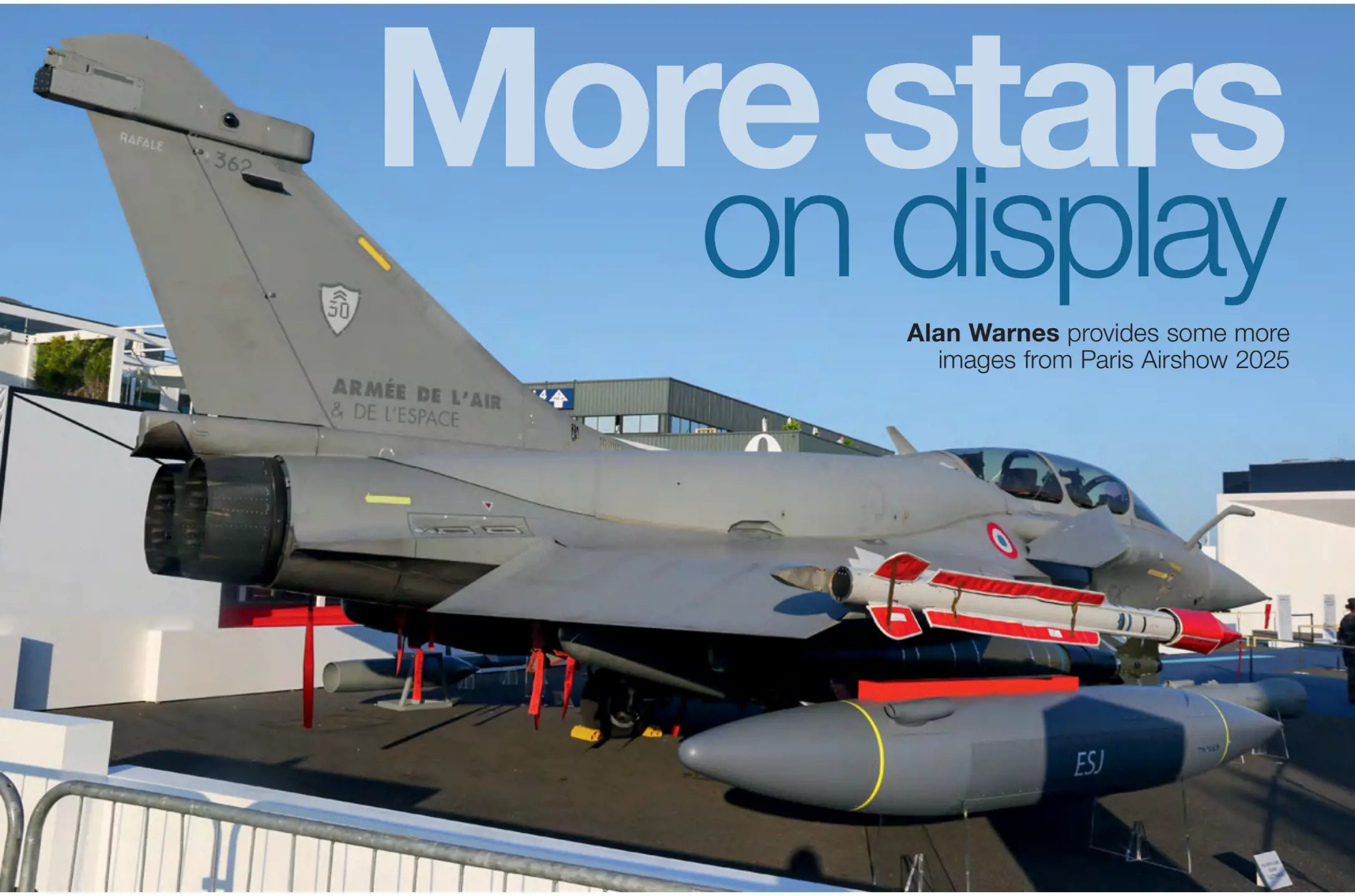
The Slovenian Air Force arrived with its only LET L-410-UVP Turbolet and a Pilatus PC-9M Swift, the latter participating in the flying display towards the end of the day. Unfortunately, taking photography of the flying display is difficult in the afternoon when the subjects are back-lit (if you are lucky enough to have the sun out), as was the case at Caslav, too. Some photographers take their ladders to the other side of the runway, which is always a good option. Overall, I thoroughly enjoyed Pardubice Airshow 2025, and the warbirds, even if the weather wasn't brilliant. **afm**



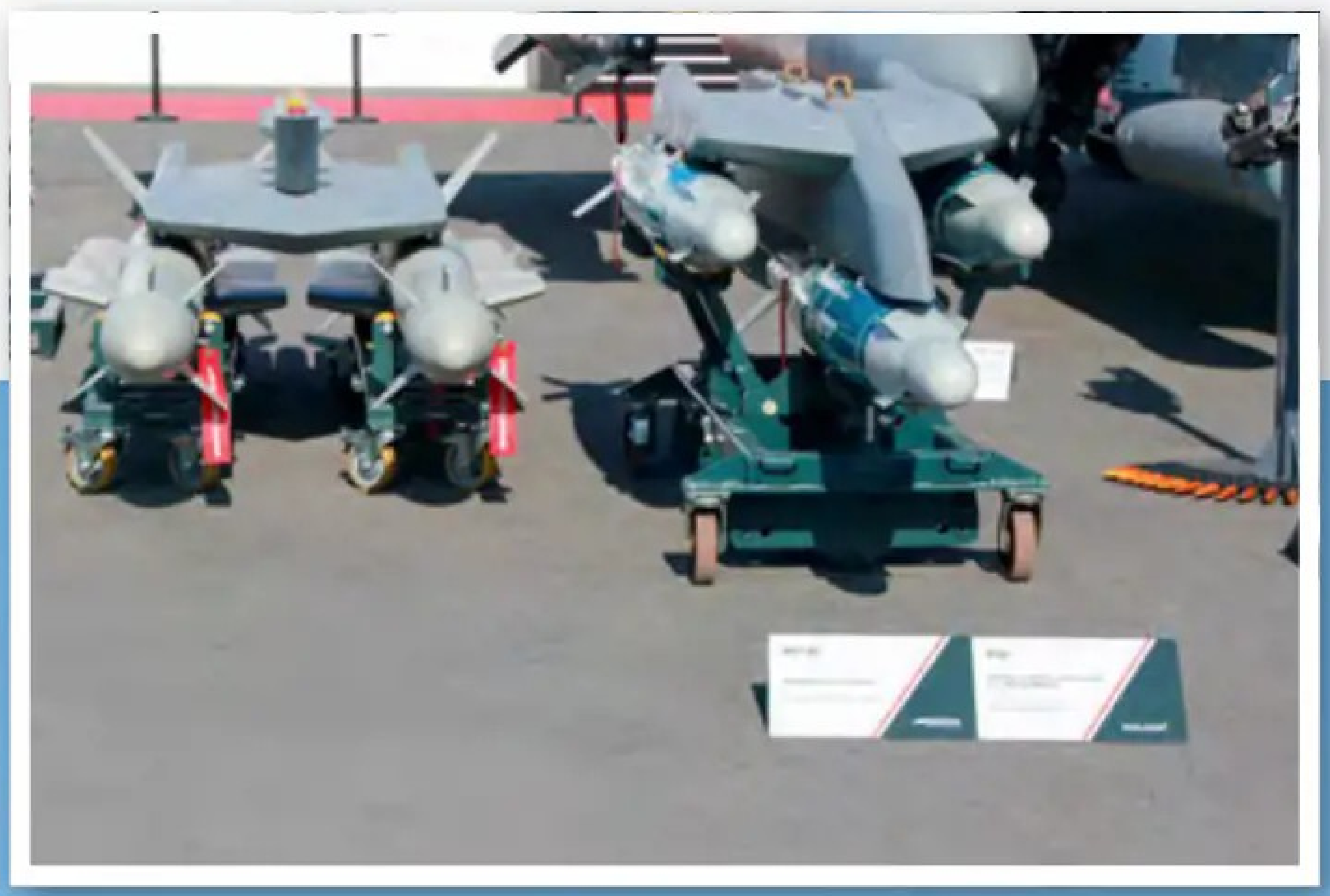
WTD 61 sent this Tornado painted to celebrate last year's 50th anniversary of the first Tornado's flight

More stars on display

Alan Warnes provides some more images from Paris Airshow 2025

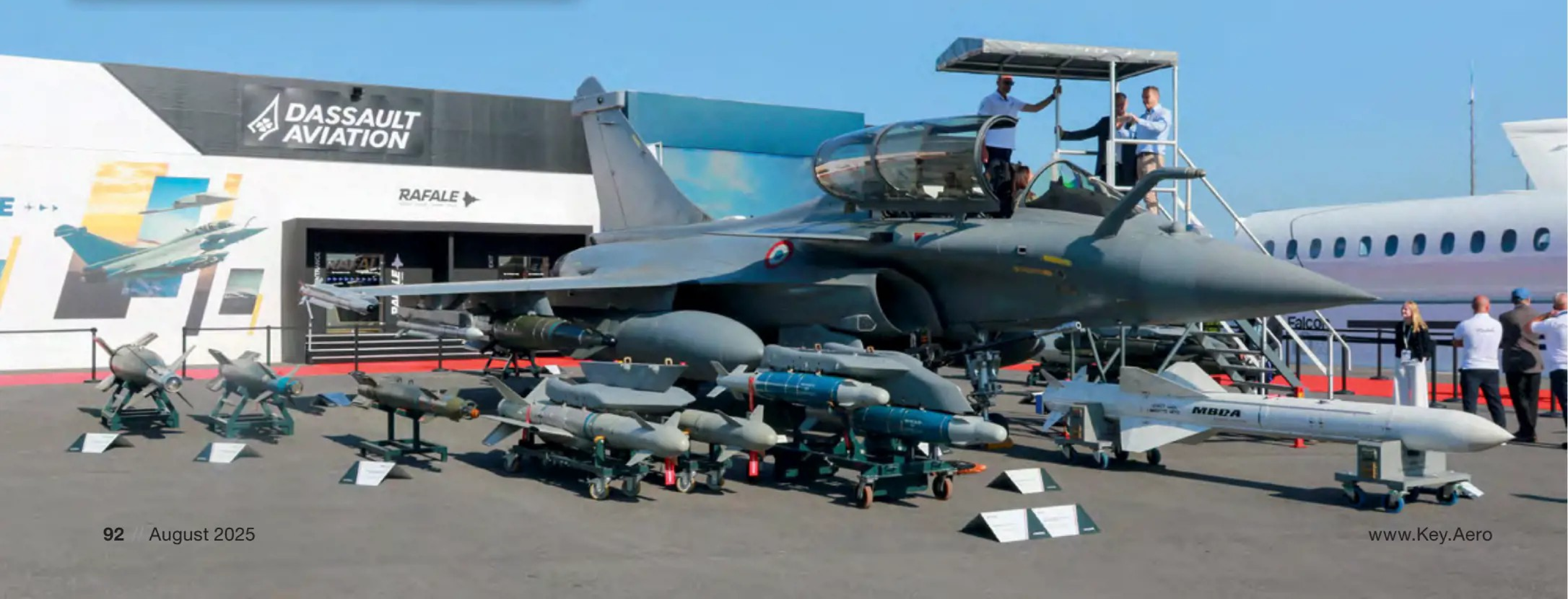


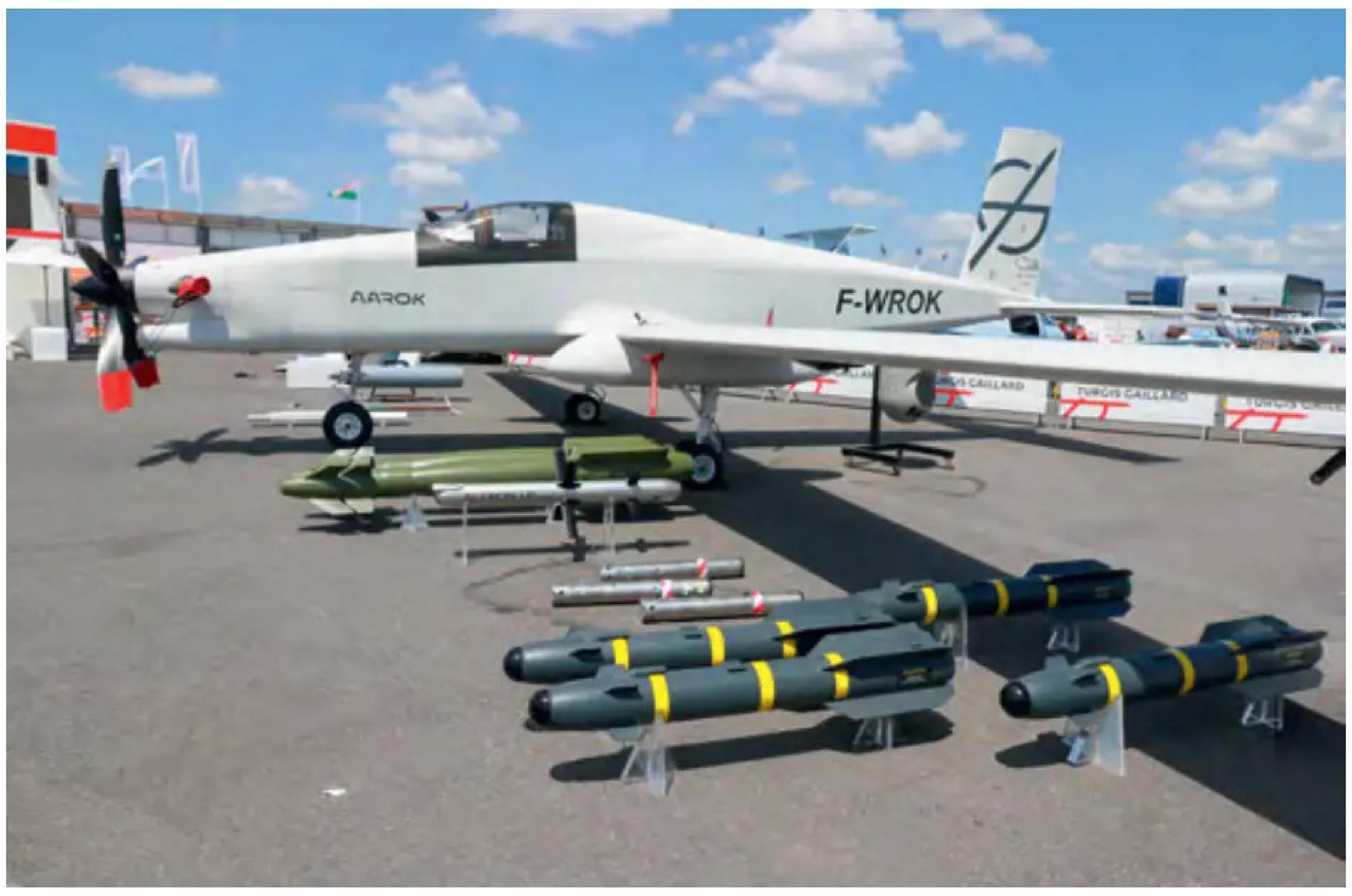
Above: ***The French Minisitere des Armees (MOD) showed off a Rafale B, 362/'30-SK' to represent a F5 version, equipped with conformal fuel tanks, just when we thought they were a thing of the past. Sat next to it was a mock-up of the Thales Electronic Warfare Jamming pod (Brouillage Guerre Electronique). Thales believes the ESJ pod as its known will take up to five years to develop for the F5 version and is being focussed on the tactical electronic warfare role (also known as electronic attack) in the SEAD/DEAD role. The Rafale's Spectra EW system protects the aircraft*** *All photos, Alan Warnes*

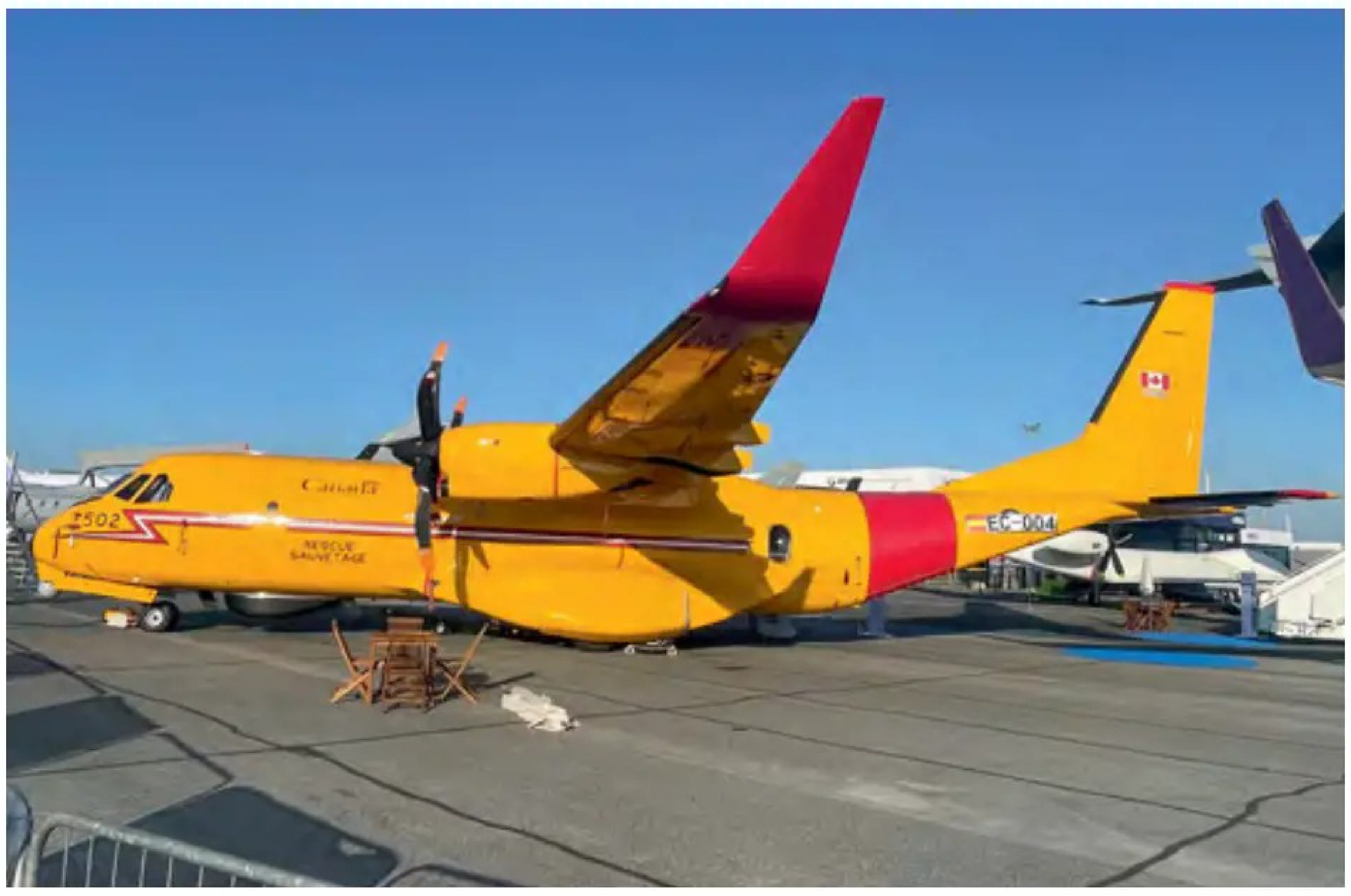


Below: ***This Rafale B, 301 was seen in the Dassault pavilion, showing all the weapons that are or have been integrated onto the jet. It is operated by the DGA-Essais en Vol (Flight tests) based at Istresa.***

*Left:**Among them were three 500lb (Mk82) Edge Halcon Systems P32 PGM on an Aresia three-bomb adaptor pylon. To the left are two 500lb (Mk82) Edge Al Tariq PGMs. Neither of the latter were labelled, in a bid to disguise their identities. All five are designed and built in the UAE***

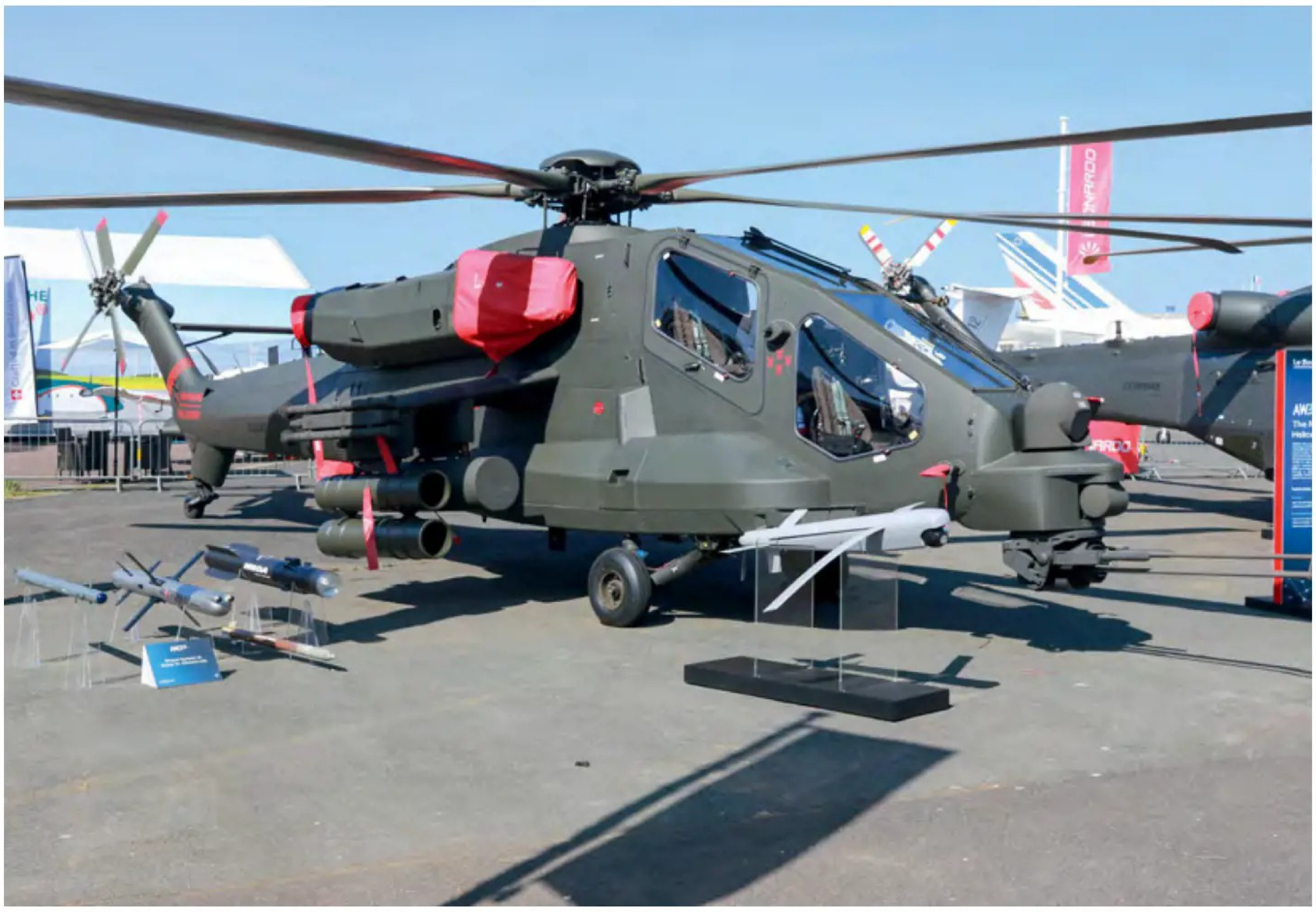




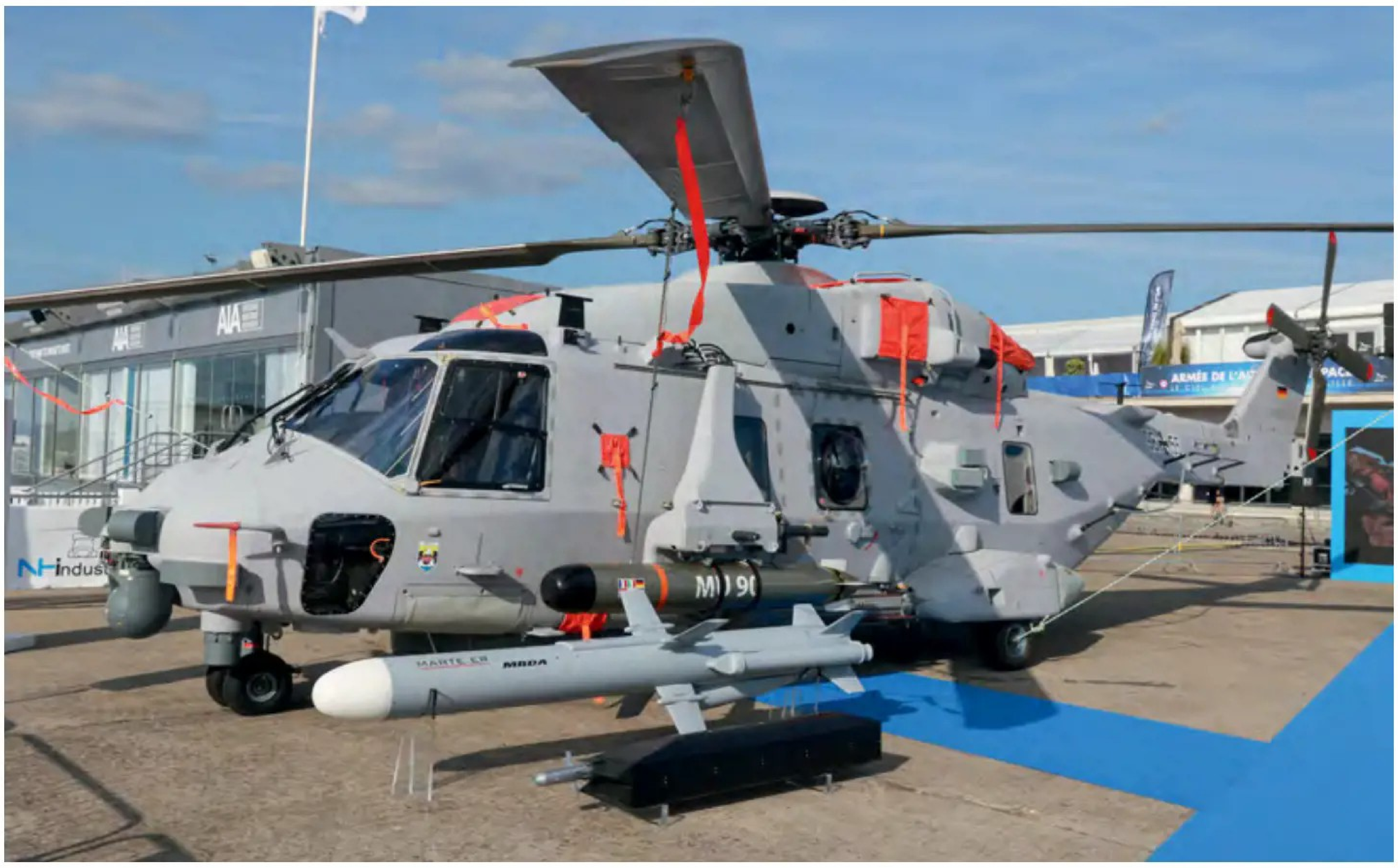


Above: **Turrgis Gaillard was exhibiting its Aarok unmanned combat aerial vehicle that the company boasted is the 'first European MALE UAV'. While it was on display at Paris 2023, it has still not made its first flight, which the company claims will take place by the end of the year. At Paris 2025 it was seen modified with a cockpit for flight-testing. Primarily designed for the intelligence, surveillance, and reconnaissance role and equipped with satellite communication systems, attack is now another option, and it was seen displayed with long range munitions**

Top Rirgt: **The second CC-295 Kingfisher, 295502 (wearing test serial EC-004) for the Royal Canadian Air Force was on display in the Airbus stand, still with flight test equipment inside. In 2016 the RCAF ordered 16 CC-295s, with the first delivered in 2019 but the programme has been dogged by software delays. Many are now stored at Seville, waiting to be delivered but the RCAF has not yet trained enough personnel to fly the whole fleet. The aircraft officially entered operational service with 442 Squadron and 19 Wing at CFB Comox on May 1, 2025**



Above: **A prototype AW249 combat helicopter was displayed alongside a MBDA Akeron long range multi-role missile, Thales/MBDA FZ275 laser-guided rocket and MBDA Brimstone missile that were being used as reference only. The Italian Army agreed a contract in 2017 for 17 AW249s and selected the Aerovironment Jump 20 air launched effector (ALE) for crewed uncrewed teaming. The ALE seen close to the nose is a concept mock up.**



Left: **The NH90 Sea Tiger was making its debut at the Paris Air Show. The helicopter will replace the Westland Sea Lynx serving the German Navy, in both the anti-submarine and anti-surface warfare role. The weapons seen here include the MBDA Marte ER anti-ship missile and, MU-90 Impact advanced lightweight torpedo. Delivery of the first of 31 NH 90 Sea Tigers to MFG-3 at Nordholz should officially begin in September 2025. The helicopter on display 98+55 is expected to be delivered to Nordholz soon**

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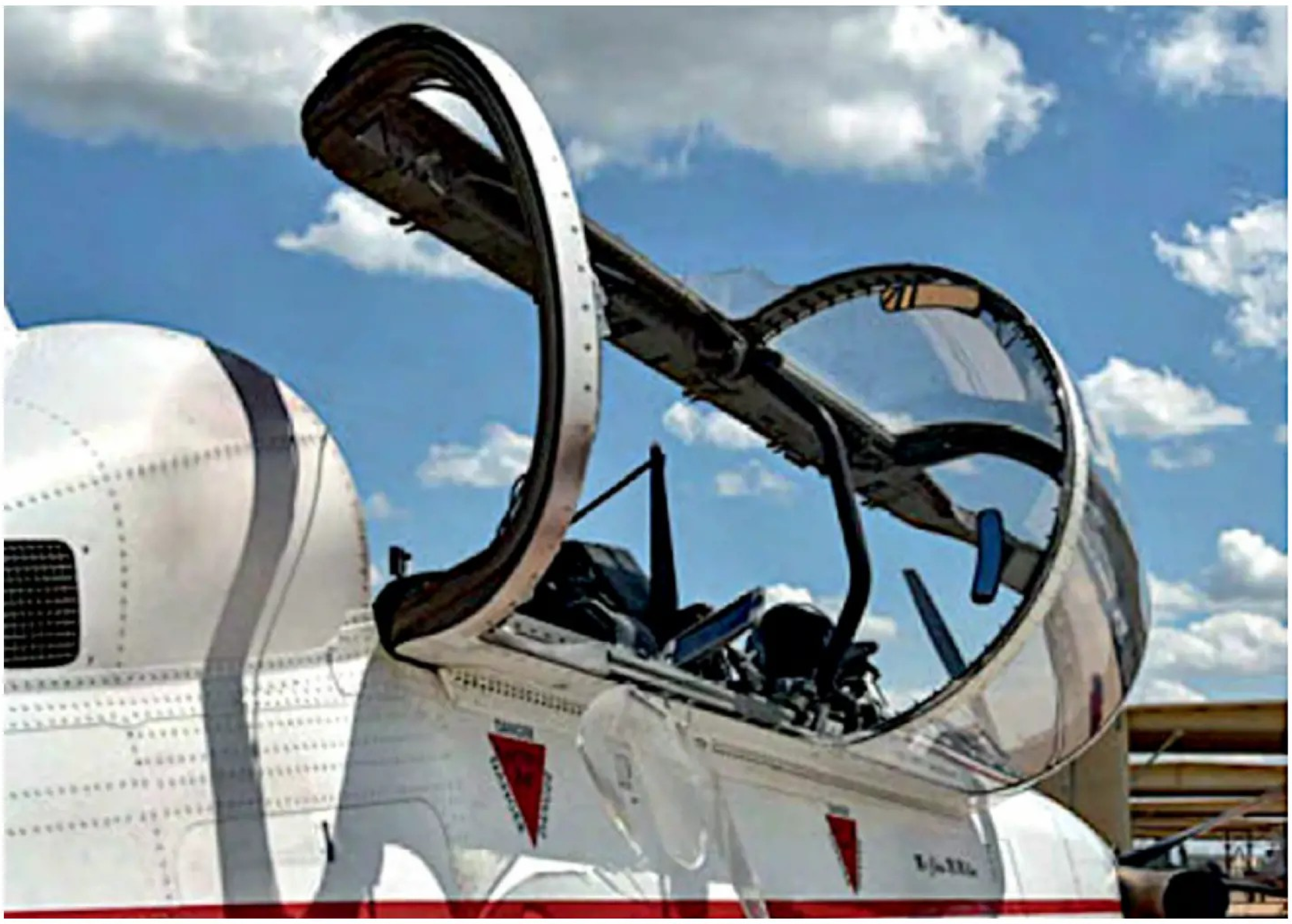
Final Report released on USAF T-6 ejection fatality



The fractured canopy of US Air Force T-6A Texan II 08-3915 'EN' following the fatal accidental ejection of its instructor pilot on May 13.2024, at Sheppard Air Force Base, Texas. USAF

US AIR Force Headquarters Air Education and Training Command has released the final Accident Investigation Board (AIB) report on the fatal accident involving a T-6A Texan II at Sheppard Air Force Base, Texas – see *Attrition* headline story, August 2024. The report, released on June 23, 2025, reveals the identity of the aircraft involved as 08-3915 'EN'.

At 1353 local (L) time on May 13, 2024, a Mishap Instructor Pilot (MIP) was killed after ejecting from the rear cockpit of a T-6A Texan II, tail number 08-3915, while taxiing to park on the ramp at Sheppard Air Force Base, Texas. The MIP was a captain First Assignment Instructor Pilot (FAIP) and the first lieutenant Mishap Student Pilot (MSP) was an international student pilot. Both pilots were assigned to the 80th Flying Training Wing (FTW), Euro-NATO Joint Jet Pilot Training (ENJJPT), and flew with the 89th Flying Training Squadron (FTS) at Sheppard AFB.

The Mishap Sortie (MS) was the second sortie of the day for the MIP, who was previously scheduled to fly only one sortie that day. The MS was the first sortie of the day for the MSP. The MS was the MSP's sixth sortie in the advanced formation block of training. The MS was a two-ship formation consisting of four individuals and two aircraft. The MSP occupied the front cockpit (FCP) and the MIP occupied the rear cockpit (RCP) of the scheduled wingman aircraft, callsign FLAME 22. The 459th Flying Training Squadron (459 FTS) Operations Supervisor authorized the MS to be conducted.

The formation flight was originally planned and scheduled as a solo sortie for the MSP. Due to low altitude clouds and poor visibility on the morning of the flight, the status of flying operations was simultaneous instruments (SI) for T-6A operations, which indicates clouds are between 1,500ft (457m) to 3,000ft (915m) above the ground level and/or visibility is between two to three statute miles. This status precluded a solo sortie for the MSP. For planned student solo sorties, an instructor pilot is identified and scheduled to fly with the student as a contingency in case poor weather precludes a solo sortie. The original instructor pilot scheduled to fly with the MSP as a contingency was no longer available, so the MSP's Flight Commander asked the MIP to fly with the MSP. The MIP accepted the request to fly with the MSP without hesitation. This formation flight was the second sortie of the day for both the flight lead instructor pilot and the MIP. The MSP's Flight Commander asked the MIP to fly the second sortie after the MIP debriefed the first sortie of the day.

After arriving at the aircraft, the two-aircraft formation completed pre-flight, engine start, taxi, take-off (at 1220L) from runway 33R, departure and formation manoeuvres in a local Military Operations Area (MOA). As briefed, the formation split up in the MOA and the Mishap Aircraft (MA) recovered to Sheppard AFB as a single ship and landed without incident.

Upon landing on runway 33R at 1342L, the MSP taxied the MA clear of the runway and initiated the After Landing Checklist, including verbal question-and-answer steps, with the MIP. These items included both pilots installing the seat safety pins into their respective ejection seats, though the MIP failed to fully install the seat safety pin in the MIP's seat. Had it been fully installed, this would have prevented actuation of the ejection control handle. An experienced T-6A instructor pilot indicated he observed student pilots improperly install the safety pin halfway on several occasions.

During taxi, the MIP partially disconnected from the rear cockpit (RCP) ejection seat system, including from the parachute. Based on expert testimony and analysis of the MIP's flight equipment after the mishap, the AIB determined that the MIP began disconnecting from the seat during the taxi to the parking ramp, including disconnecting the left and right Frost fittings (parachute connections), the harness chest strap, the left SSK buckle and the left leg restraint garter. Disconnecting from the ejection seat connections during the taxi back to parking was a common practice for the MIP (which testimony revealed the MIP did on the MIP's first flight that morning) as well as other instructor pilots in the T-6A. At 1353L, as the MSP was taxiing the MA at approximately 15kts adjacent to the Juliet parking row and preparing to turn into the taxi lane between the Juliet and Kilo parking rows, the MIP inadvertently actuated the ejection handle, ejecting from the MA in the Martin-Baker US16LA ejection seat.

The MIP remained partially connected to, and seated in, the ejection seat until automatic seat/pilot separation. The MIP separated from the seat 100ft (30m) above the ground, fell headfirst through an aircraft sunshade and landed on the ground 261ft (79.5m) from the MA. The MIP sustained non-survivable injuries, later succumbing to those injuries the next morning at a local hospital. The MSP did not eject and received no injuries. The MA sustained significant damage.

The Board President found by a preponderance of the evidence, there were two causes of the mishap: (1) the MIP failed to fully install the RCP ejection seat safety pin during the After Landing Checklist; and (2) the MIP partially disconnected from the ejection seat allowing the harness chest strap V-ring to unknowingly get caught on and inadvertently actuate the ejection seat control handle.

Accident Reports

Armed Al-Shabaab militants stand on wrecked Burundi National Defence Forces/AUSSOM Agusta Bell 412 AUO-012/BAF-1135 after it force landed in Somalia on June 2 Al-Shabaab

D: May 18
N: Colombian Army
T: UH-60L Black Hawk
S: EJC2157

The helicopter was shot at by armed militias in La Espiga, Cumbitara, Nariño, and carried out evasive manoeuvres. Despite the attack, the crew was able to continue with their planned mission to extract eight troops, including an injured soldier, and make a safe return to Antonio Nariño Airport. After landing, upon inspection of the Black Hawk, seven bullet holes were discovered. These included an impact on the starboard stabiliser, one on the tail cone on the same side, one more in the tail cone on the port side and another on the lower part of the tail cone. Impacts were also recorded in the upper transmission area on the port side of the APU wall, on the starboard wheel and on the port crew window. None of these had affected the structural integrity of the helicopter.

D: May 29
N: Republic of Korea Navy/61st Patrol Air Group
T: P-3CK Orion
S: 100917

During the initial climb out from Pohang Air Base to participate in a training exercise the aircraft was destroyed when it struck a wooded hillside ESE of the airfield at 1352hrs local time, six minutes after take-off. The crash started a significant forest fire, which was extinguished by local firefighters. All four crew members were killed.

D: May 30
N: Air Force of Zimbabwe
T: Chengdu F-7II

Shortly after take-off from Gweru-Josiah Tungamirai (formerly Thornhill) Air Base, the aircraft caught fire in mid-air and was destroyed in a crash in the nearby Wazheri area of Gweru. Veteran pilot Squadron Leader Ritswanetsi Vuyo Ncube was killed. Just before the crash, in his last radio communication, he reported the aircraft was on fire and uncontrollable.

D: Jun 1
N: Russian Air Force
T: Multiple aircraft
S: See text below

During an intensive attack on June 1 conducted by the Ukrainian SBU/HUR with FPV quadcopters on several Russian air bases (Olenya, Belaya, Diaghilevo, Ivanovo and Ukrainka) multiple Russian Air Force aircraft were destroyed and others damaged. At Olenya, four Tu-95MS were destroyed of which three were ’20 Red’/RF-94122, ’14 Red’/RF-94132 and ’22 Red’/RF-94257, while one other was damaged. Also destroyed at Olenya was An-12BK ‘11 Red’/RF-94211 while two Tu-22M3s at the base were also damaged. At Belaya, three Tu-95MS were destroyed including ’29 Red’/RF-94120, one more was damaged, four Tu-22M3 were destroyed including RF-94216 and one other damaged and Il-78M ’36 Blue’/RF-94274 was destroyed. At Ivanovo, two Beriev A-50s (probably non-operational) were damaged. At Dyagilevo three Tu-22M3 were damaged.

D: Jun 2
N: Burundi National Defence Forces/Aviation Unit/African Union (AU)/African Union Support and Stabilisation Mission in Somalia (AUSSOM)
T: Agusta-Bell 412
S: AUO-012/BAF-1135

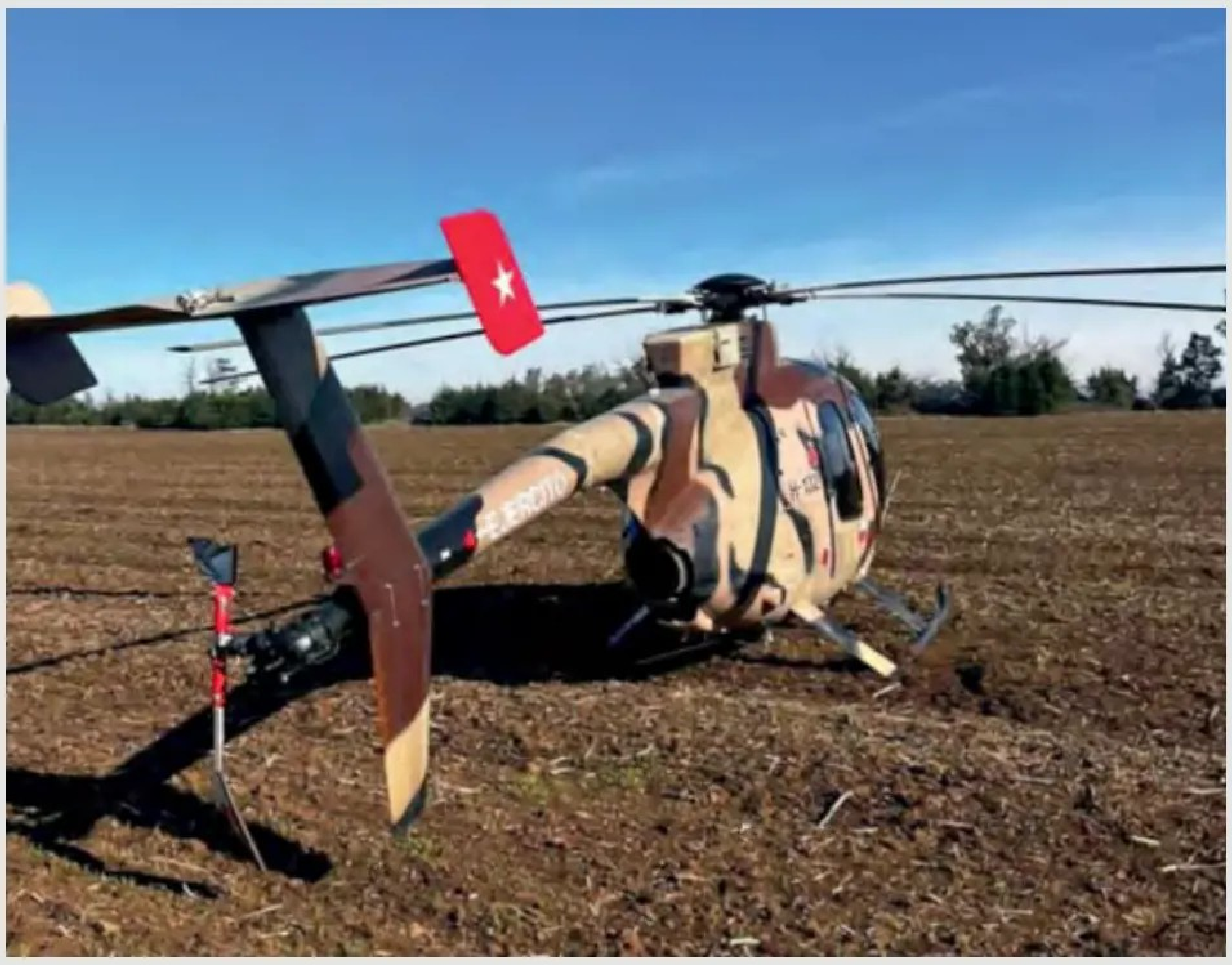
While operating with the African Union Support and Stabilisation Mission in Somalia (AUSSOM) evacuating Burundian troops stationed at Xawaadley Forward Operating Base, northeast of Mogadishu, Somalia, due to heavy flooding in the area, this helicopter experienced a technical malfunction. During the ensuing forced landing, in a location near Al-Shabaab militant-controlled territory, it sustained substantial damage. In a press release, AUSSOM confirmed that all troops and crew on board were successfully evacuated to the nearest military base, and no casualties were reported. Al-Shabaab subsequently captured the wrecked helicopter after it had been abandoned and displayed images of it online with armed Al-Shabaab militants standing on top of it. According to local residents, the militants also seized equipment from the helicopter.

D: Jun 2
N: US Navy/HT-18
T: TH-73A Thrasher
S: 170207 ‘E-710’

During a training flight from Naval Air Station, Whiting Field, Florida, the helicopter was substantially damaged in a hard landing at approximately 1400hrs local time on a helicopter pad at Naval Outlying Landing Field Santa Rosa, Florida. Both the student and instructor were injured and taken to hospital, where they were reported to be in a stable condition. US Naval Safety Command has classified the accident as a Class A mishap, indicating at least $2.5 million-worth of damage.

D: Jun 5
N: Russian Air Force
T: Mi-8

This helicopter was hit during a Ukrainian UAV attack on Bryansk International Airport, Russia,



Chilean Army MD369FF (MD530F) Defender H-132 following its emergency landing on June 10 near Traiguén, in the Araucanía Region Via Twitter

Attrition Report

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Royal Air Force F-35B Lightning II ZM168 '034' under guard at Thiruvananthapuram International Airport, India, after an emergency diversion to there on June 14 *CISF*

following which it caught fire and was completely burnt out. An Mi-35 was also damaged during the same attack.

D: Jun 7
N: Russian Air Force
T: Su-35S

This aircraft was destroyed when it was shot down at 1000hrs local time in Kursk Oblast, Russia, during a combat mission. The pilot ejected safely and was recovered by a combat search and rescue team. Russian sources said the fighter was downed by an MIM-104 Patriot air defence system stationed in the city of Sumy but Ukrainian officials stated that one of its F-16s had brought it down with an AIM-120 AMRAAM.

D: Jun 10
N: Chilean Army
T: MD369FF (MD530F) Defender
S: H-132

This helicopter was substantially damaged in an emergency landing due to a technical problem near route R-86, close to the city of Traiguén, in the Araucanía Region of central Chile. The four occupants (two pilots and two passengers) were unhurt. The tail rotor was destroyed during the landing and the tail boom broken.

D: Jun 10
N: Republic of Korea Air Force
T: KF-16D

During take-off from Eielson Air Force Base, Alaska, at approximately 1600hrs local time, the aircraft departed the prepared surface of the runway into the grass infield and the nosewheel collapsed, resulting in substantial damage. Both aircrew ground ejected safely and were transported to Bassett Army Community Hospital at nearby Fort Wainwright for further examination of minor burns and lacerations. The 354th Fighter Wing and local emergency response teams quickly extinguished a small fire, which the ROFAF said had "partially destroyed" the aircraft.

D: Jun 10
N: Myanmar Air Force
T: Chengdu J-7

This aircraft was destroyed when it crashed in Pale township, Sagaing region, Myanmar, at 1230hrs local time, during a combat mission. A rebel group claimed to have shot it down but State-run media said it had suffered a sudden technical malfunction of the engine. Although unconfirmed, the two crew are believed to have been killed. The aircraft struck five houses in the village of Sa Par Sayt, killing four of the occupants.

D: Jun 11
N: US Army/B Company/1-101st AVN
T: AH-64E Apache Guardian

This helicopter was destroyed when it crashed at approximately 1900hrs local time at Fort Campbell, Kentucky, during a training exercise. One of the two crew members, pilot CW2 Dustin K Wright, was killed and the co-pilot was injured and evacuated to Blanchfield Army Community Hospital and is in stable condition.

D: Jun 13
N: Islamic Republic of Iran Air Force
T: Multiple MiG-29 Fulcrums

Several of these aircraft were destroyed during an Israeli Air Force attack on a hangar at Mehrabad International Airport as part of Operation Rising Lion.

D: Jun 13
N: Islamic Republic of Iran Air Force
T: Multiple F-14 Tomcats

Several of these aircraft were destroyed during an Israeli Air Force attack on a hangar at Mehrabad International Airport as part of Operation Rising Lion.

D: Jun 13
N: Russian Air Force
T: Su-25 Frogfoot

While making a sharp turn after firing a salvo of FFAR rockets during a combat mission, the aircraft suffered a structural fatigue failure in one wing and was destroyed in the subsequent crash in Soledar, Bakhmut Raion, Donetsk Oblast, Ukraine. The pilot ejected, suffering only a broken arm and was recovered by an Mi-8M which was undertaking combat SAR duties.

D: Jun 14
N: Royal Air Force
T: F-35B Lightning II
S: ZM168 '034'

While undertaking a training flight from the Royal Navy aircraft carrier HMS *Prince of Wales* (R 09) in the Indian Ocean in international airspace outside the Indian Air Defence Identification Zone the pilot declared an emergency due to a low fuel state. The aircraft diverted to Thiruvananthapuram International Airport, India, where it landed safely at around 2130hrs local time. Local media reported that extremely bad weather in the area had prevented the F-35B from landing on the carrier, despite multiple attempts in poor visibility and strong winds. As of June 17, the aircraft was still at the airport and a Royal Navy Merlin HC4 with engineers on board had been dispatched to the airport, suggesting there may also be a technical issue with the aircraft. The carrier was approximately 100nm off the Indian coast at the time of the incident.

D: Jun 14
N: Kenyan Air Force
T: Grob G 120A-K
S: KAF 718

Both pilots were killed and the aircraft destroyed when it encountered an emergency and crashed in an open area near Mwakijembe Primary School, Ndavaya, Kwale County, Kinango, Kenya, during a training flight. The Grob had departed Mombasa at 1139hrs local time and crashed at approximately 1206hrs, 27 minutes after take-off.

D: Jun 14
N: Russian Air Force/Africa Corps
T: Su-24M Fencer

This aircraft was badly damaged when it crashed into a river near Gao, Mali, while attempting an emergency landing due to a suspected technical malfunction moments before impact while returning from a combat mission in eastern Mali. Both pilots ejected and were safely rescued and receiving medical care. The aircraft has been variously reported as being operated by Russia's Africa Corps or by the Malian republic Air Force, which has not previously operated type. However, Su-24s have been confirmed operating in the country for several months, with satellite images showing one parked at Bamako Airport on April 14.

Close up of damage to an Islamic Republic of Iran Red Crescent Air Rescue Mi-17 after it was badly damaged on the ground on June 21 *Iranian Red Crescent*

Targeting image of an Islamic Republic of Iran Air Force F-5 Tiger II at the 4th Tactical Air Base, Dezful-Ardestani, a split second before it was destroyed when it received a direct hit during an Israeli attack on June 22 IDF

D: Jun 15
N: Islamic Republic of Iran Air Force
T: Boeing 747-131SF
S: 5-8107

This aircraft was destroyed during an Israeli Air Force attack on Mashhad International Airport as part of Operation Rising Lion. It was reported to be the IRIAF's sole remaining operational KC-747 tanker.

D: Jun 15
N: Islamic Republic of Iran Air Force
T: Boeing 747-270C
S: 5-8106

This aircraft was extensively damaged damaged during an Israeli Air Force attack on Mashhad International Airport as part of Operation Rising Lion as it was parked next to another 747 that burned out after being hit – see above.

D: Jun 15
N: Spanish Air Force/Ala 11
T: Eurofighter EF2000
S: C.16-25 '11-25'

During a display at the Aire 25 airshow at San Javier, Spain, the aircraft suffered a bird strike to the front of the cockpit canopy. The pilot immediately terminated the display and landed safely at Murcia-San Javier Air Base at 1225hrs local time. The pilot was unhurt and damage appeared to be confined to the canopy glazing.

D: Jun 15
N: Ukrainian Ministry of Defence/Main Directorate of Intelligence
T: Aeroprakt A-22 Foxbat (modified)

This aircraft, modified as an unmanned attack aircraft, was shot down by Russian air defence forces while it was flying over Alabuga Special Economic Zone (SEZ), Yelabuga, Republic of Tatarstan, Russia. It was struck over a car manufacturing plant, as a result of which two civilians were injured and 13 others injured when it crashed. The A-22 was targeting a production facility for the Geran-2 (Iranian HESA Shahed 136) loitering munition in the Alabuga SEZ but was brought down before it reached its target.

D: Jun 17
N: Israeli Air Force
T: Elbit Hermes 900 Kochav
S: 997

This UAV was destroyed when it crashed near the city of Isfahan, Isfahan County, Isfahan Province, Iran. Iran's state broadcaster IRIB showed footage of the wreckage, inverted in an open area, with the nose, tail and port wing smashed. It was unclear whether it had been shot down or crashed as a result of a technical malfunction.

D: Jun 17
N: US Navy/Training Air Wing 5
T: T-6B Texan II

Due to adverse weather in the area while on a training flight, the aircraft diverted to Pensacola International Airport, Florida, where it made an emergency landing with the undercarriage retracted at approximately 1300hrs local time. As a precaution, the two crew members were transported to a local medical facility for assessment. The airport was temporarily closed while the aircraft was removed from the runway. The extent of damage to the airframe is unconfirmed. The aircraft was assigned to Training Air Wing 5 at Naval Air Station Whiting Field, Florida.

D: Jun 19
N: Israeli Air Force
T: 2 x IAI Heron TP Eitan UAVs

Both of these drones were destroyed when shot down over western Iran, one of them over Lorestan. The Iranian military released videos of the shoot downs, but did not say what weapons were used in the attack.

D: Jun 20
N: Royal Air Force
T: 2 x Voyager KC2

Two members of the Palestine Action direct action protest group broke into RAF Brize Norton, Oxfordshire, during the night, entering the base on electric scooters and vandalising these two aircraft while they were parked on the apron. Red paint was sprayed into their engines using repurposed fire extinguishers and they were also hit with crowbars, causing an unknown amount of damage. The protesters then escaped afterwards without being caught. The government said a full security review was under way that would encompass the entire defence estate. The police said they would take all necessary steps to investigate and prosecute the offenders, with police anti-terrorism officers taking over the investigation.

D: Jun 21
N: Islamic Republic of Iran Red Crescent Air Rescue
T: Mi-17

This helicopter was badly damaged on the ground at an unspecified location in Iran while undertaking aid activities during an Israeli air strike.

D: Jun 22
N: Islamic Republic of Iran Air Force
T: 2 x F-5E/F Tiger II

During an air attack on the 4th Tactical Air Base, Dezful-Ardestani, in Iran. Israel claimed to have destroyed these two aircraft while they were parked on the apron. Video footage of the attack showed that at least one of them received a direct hit.

D: Jun 23
N: Israeli Air Force
T: Elbit Hermes 900 Kochav
S: 939

This UAV was destroyed when it was downed by Iranian Revolutionary Guards Corps air defence forces near Arak, Arak County, Markazi Province, Iran, before it was able to attack Iranian military forces. Iranian media images of the wreckage confirmed the loss.

D: Jun 23
N: Israeli Air Force
T: Elbit Hermes 900 Kochav

This UAV was destroyed when it was downed by Iranian Revolutionary Guards Corps air defence forces near the city of Khorramabad, Khorramabad County, Lorestan Province, Iran. Footage of the wreckage was shown by Iranian media, confirming the loss.

D: Jun 23
N: Royal Malaysian Air Force/21 Skuadron
T: CN235M-220

While landing on the main runway at No 5 Air Base, Kuching, at 1130hrs local time, after a flight from Labuan and Kota Kinabalu, the aircraft's nose undercarriage collapsed. The CN235 came to rest nose down on the runway, blocking it for 3½ hours until the aircraft could be removed and the runway checked for debris. No injuries were reported to the passengers or crew and damage to the airframe appeared to be minor. The runway closure temporarily brought to a halt all flight operations from the base and the co-located Kuching International Airport.

Additional material from:
Scramble/Dutch Aviation Society and Asagiri Yohko.

Wreckage of Israeli Air Force Elbit Hermes 900 Kochav 939 after it was downed in Iran on June 23 by Iranian Revolutionary Guards Corps air defence forces Iranian media

Next Issue

A formation of 12th Combat Aviation Brigade CH-47F Chinooks arrives over the landing zone to drop off support vehicles for the raid on Oudemolen in the Netherlands, a former munitions complex. The 12th CAB took 13 helicopters to the exercise Frank Vissers

Exercise
Falcon Spring

Around 1,500 troops and 20 helicopters of both the Royal Netherlands Air Force (RNLAF) and the US Army Europe operated together in this large-scale air assault exercise in the northern Netherlands. Frank Vissers has the details

• French A400 Tankers

The French Air and Space Force (FASF), the second-largest global operator of the Airbus A400M Atlas, is advancing its aerial refuelling capabilities by adapting part of its fleet for dedicated tanker roles. Babak Taghvaee reports

• Formidable Shield 2025

VMGR-234's heavy-lifting enables the progression of NATO's largest live-fire exercise in the European theatre. The US Marine Corps' reserve unit detached two KC-130Js to Prestwick, Scotland, to conduct a high-intensity logistics operation and to provide aerial refuelling capabilities for exercise air assets. Stewart Marshall visited the detachment at Prestwick to understand their role in the biennial exercise

NEXT ISSUE

The September edition of *AirForces Monthly* is on sale from August 21, 2025

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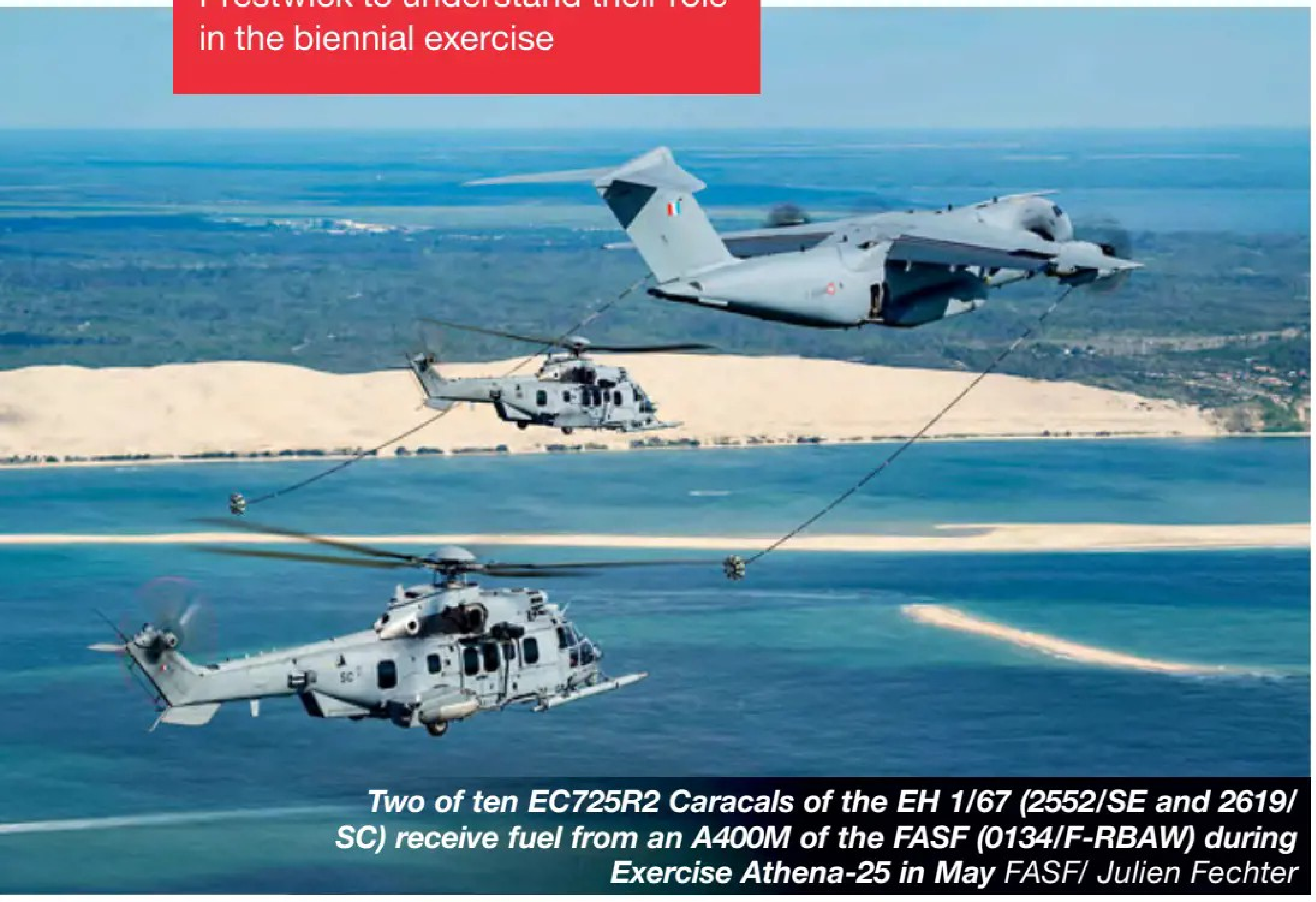
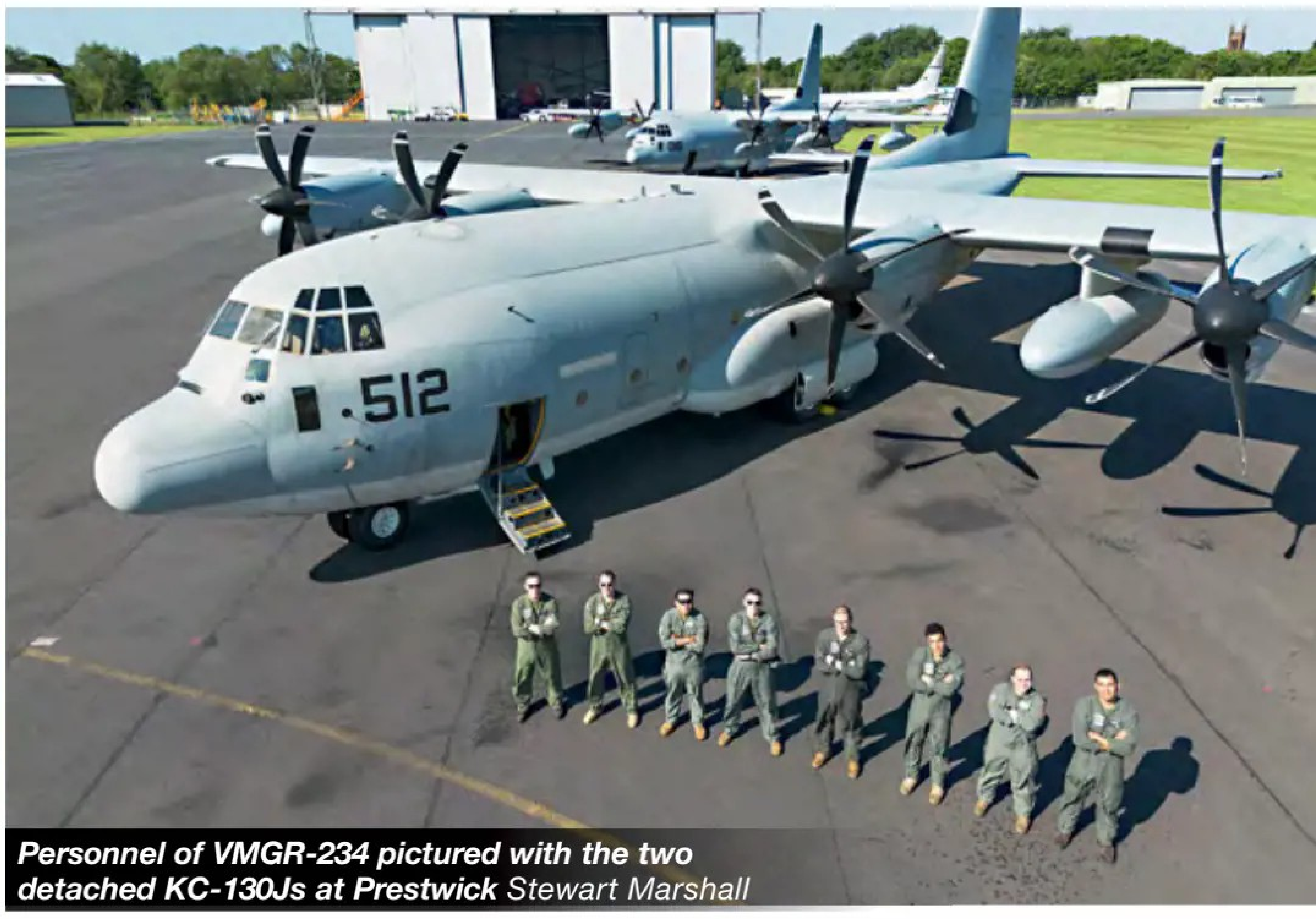


Two of ten EC725R2 Caracals of the EH 1/67 (2552/SE and 2619/SC) receive fuel from an A400M of the FASF (0134/F-RBAW) during Exercise Athena-25 in May FASF/ Julien Fechter



Personnel of VMGR-234 pictured with the two detached KC-130Js at Prestwick Stewart Marshall

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